



Municipal Technical Advisory Service
INSTITUTE *for* PUBLIC SERVICE

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Design Criteria

Dear Reader:

The following document was created from the MTAS website ([mtas.tennessee.edu](https://www.mtas.tennessee.edu)). This website is maintained daily by MTAS staff and seeks to represent the most current information regarding issues relative to Tennessee municipal government.

We hope this information will be useful to you; reference to it will assist you with many of the questions that will arise in your tenure with municipal government. However, the *Tennessee Code Annotated* and other relevant laws or regulations should always be consulted before any action is taken based upon the contents of this document.

Please feel free to contact us if you have questions or comments regarding this information or any other MTAS website material.

Sincerely,

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Design Criteria

Reference Number: MTAS-756

Specific standards will vary from one city to the next, as geologic, topographic and other environmental factors change. The basic guideline is to adopt construction standards that address the following:

- **Unit strength:** The tower design, the materials with which it is constructed and the methods used in construction must be sufficient for the tower to support its own weight plus the weight of any antennas it may support. Care should be taken to assure that unit strength is adequate to support antennas that may be added to the structure after the initial construction is completed.
- **Foundation strength:** The engineering of the foundation must take into account geologic and seismic factors that may affect the stability of the structure.
- **Wind loads:** The structure should be of sufficient rigidity to withstand the highest wind velocities prevalent in the area. Standards may be more stringent in heavily populated areas than in rural setting, for taller structures than for shorter towers, etc.
- **Ice loads:** Telecommunications towers must be designed to withstand ice storms typical for the environment in which they are located.

The American National Standards Institute (ANSI) and the Telecommunications Industry Association (TIA) have jointly developed nationally recognized design standards for telecommunications towers, published as “ANSI/TIA Standard 222 — Structural Standards for Antenna Supporting Structures and Antennas, Revision G.” Tennessee cities should procure a copy of these standards and include them by reference in their telecommunications ordinances.

The ANSI/TIA tower design standard contains a complicated mixture of engineering formulas and statistical analyses. For this reason, any review of a proposed tower construction is best left to a qualified and experienced structural engineer, one who can subject the proposed design to sophisticated computer analysis. Tennessee cities should require all tower plans to bear the stamp of a professional engineer registered in the state of Tennessee.

DISCLAIMER: The letters and publications written by the MTAS consultants were written based upon the law at the time and/or a specific sets of facts. The laws referenced in the letters and publications may have changed and/or the technical advice provided may not be applicable to your city or circumstances. Always consult with your city attorney or an MTAS consultant before taking any action based on information contained in this website.

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