

February 25, 2025

Attn: **Vogue Towers II, LLC**
430 Chestnut St., Suite 101B
Chattanooga, TN 37402

Re: **Fall Zone Letter for Proposed 125' Monopole (Excluding 5' Lightning Rod)**

Site Name: Lanton
Address: Grove Park Way, Columbia, TN 38401
Building Code: IBC 2018
Design Standard: ANSI/TIA-222-H

Dear Vogue Towers II,

Strut Engineering & Investment, Inc (Strut E&I, Inc) has reviewed the proposed Vogue Tower communications tower installation at the above-mentioned site. The project will contain a monopole-type antenna support tower with a height of 125' above ground level (AGL). The monopole structure is made up of hot dipped galvanized high strength steel tubing that is typically 48-60" diameter at its base and tapering to 18" diameter at the top.

The antenna cables will be routed from the ground-based equipment up the inside of the pole to the proposed antenna rad center. The tower manufacturer shall supply structural design drawings prepared by a licensed Structural Engineer in the State of Tennessee at the time of Building Permit submission for review by the County before construction can commence.

The tower will be designed in accordance with the Tennessee State Building Code and International Building Code (IBC). Both of these codes have adopted the Telecommunications Industry Association/Electronics Industry Association Standards (ANSI/TIA-222-H). These standards dictate the design of all communications towers and take into consideration the following parameters:

1. Structure Risk Category/Class
Category/Class is chosen based upon the function of risk to human life, potential damage to property in the event of failure and the type of services that the tower will provide (i.e. essential communications vs. services that are optional)
2. Environmental Loading
Includes wind, ice, and seismic loads based upon local county-based data
3. Site Exposure Category
Category is chosen based upon "surface roughness" of local surrounding vegetation, structures and natural topography. This also impacts wind loading calculations
4. Topographic Category
Category is chosen based upon wind "speed-up" effects from surrounding topography, such as towers being located within gently rolling terrain or at the top of a hill or ridge

The design of the tower shall be such that in the unlikely event of structural failure, the monopole will collapse onto itself and not onto a street or a building. In other words, structural failure would be typical of that of a straw bending onto itself, rather than a bowling pin being knocked over. **Vogue Towers shall stipulate to the tower manufacturer/designer that the area of probable failure be located at the 50% TOTAL height (65'-0" AGL) of the monopole plus lightning rod so that only the top 50% of the monopole plus the**

lightning rod (top 65'-0") would collapse onto itself. This is done by over-designing the tower sections below the failure point as necessary.

In regard to the possibility of any future corrosion of the structure, the monopole shall be constructed with hot dipped galvanized steel, similar to that of highway signs and traffic signal poles. The ANSI/TIA-222-H standards have been based in part on the American Association of State Highway and Transportation Officials (AASHTO) standards which govern the construction and design standards for those structures (which have an extremely rare rate of corrosion related failures). Furthermore, the tower owner will be required to inspect the structure at intervals stipulated by ANSI/TIA-222-H standards or as may be stipulated by the underlying municipal authority, whichever is more stringent.

A geotechnical evaluation will be conducted that will explore the subsurface conditions in the vicinity of the proposed tower and develop geotechnical engineering recommendations to facilitate the design of the tower foundation. A report will be generated that shall be utilized by the tower manufacturer/designer to prepare foundation design drawings to be submitted at the time of Building Permit submission for review by the County before construction can commence. The geotechnical report and design drawings shall all be prepared by licensed Geotechnical Engineers in the State of Tennessee.

In summary, monopole-type antenna support structures are designed for extreme wind conditions with factors of safety that result in a design that is extremely conservative. The occurrence of monopole failure is exceptionally rare and historically these structures have survived after experiencing wind speeds considerably higher than their design speeds.

Should you have any questions, please do not hesitate to contact me.

Sincerely,

STRUT Engineering & Investment, Inc.



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Senior Structural Engineer

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