

# Kimley»Horn

March 6, 2024

Mr. Matt Hartley  
Verizon Wireless  
10300 Old Alabama Connector Road  
Alpharetta, GA 30022

Re: Engineers Opinion of Tower Fall Zone – Pond Fork  
4410 Holly Springs Road  
Gillsville, GA 30543

Dear: Mr. Hartley

As part of the proposed telecommunications site listed above, we are designing the site to conform to the need of setback requirements. When the tower structure is procured and awarded to a tower manufacturer, the tower manufacturer will have considered and by design, controlled the characteristics of a tower collapse in the unlikely event of a greater than code-prescribed load event.

The industry standard, TIA-222-H, provides the applicable loads and strength design requirements for towers, foundations and the surrounding soils. It is based on a load and resistance factored design (LRFD) and ultimate strength design (USD) approach. These approaches apply larger than anticipated loads, including weights, wind, wind with ice and earthquake, as applicable to the site and structure. For instance, the wind loading used in the standard is based on a 50-year storm with a 2 percent probability of occurrence. An overload factor of 1.6 is applied to design wind load.

These loads are then compared with the reduced calculated resistances of the steel tower, concrete foundation and surrounding soils. Steel and concrete components are designed by reducing their calculated strength one tenth to one quarter. Foundation (soil) components are designed by reducing their calculated strength by one quarter.

This results in a factor of safety between 1.78 and 2.13. Therefore, towers are not designed to fail. Rather, we design them to sustain little to no damage during a design event. In our industry, this usually involves winds resulting from a hurricane.

If failure were to occur, the mode would likely include: localized buckling of bracing or vertical pipe columns, bending over and contacting the tower below or collapsing to ground. In either instance, the profile exposed to the wind would greatly reduce, thus would the loading on the remaining portion of tower.

Given the potential failure types, it should be noted that given a setback of twice the height of the tower to the property lines and four times the height from any off-site residential structure, this is more than adequate to contain any particular failure. With a tower height of 265', we have provided 530'-7" to the nearest property line as well as 1,060'-0" to the nearest off-site residential structure.

Sincerely,

David Cousins, P.E.

