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August 12, 2024
Derek W. Orth
Inglesino Taylor
600 Parsippany Road, Suite 204
Parsippany, New Jersey 07054

Subject: **Non-Ionizing Electromagnetic Radiation (NIER) Report**
"V-Fee Mendham Apartments"
84-90 East Main Street
Mendham, NJ 07945

Mr. Orth:

I have received and executed your request that I perform an independent evaluation and certification of the anticipated radio-frequency exposure levels at all accessible areas of the multi-family residential development proposed at the above referenced address. The intention of this study is to verify compliance with Federal Communications Commission (hereafter "FCC") guidelines for human exposure limits to radio-frequency electromagnetic fields as per FCC Code of Federal Regulation 47 CFR 1.1307 and 1.1310. As a registered Professional Engineer, I am bound by a code of ethics to hold paramount the safety, health, and welfare of the public. All statements and calculations offered herein are made in an objective and truthful manner pursuant to that code.

Summary of Findings
There exists a 142' (stealth flagpole) telecommunications tower immediately adjacent to the premium parking and auto services building planned on the southeast side of the development. The tower is owned by Phoenix Tower and co-located in the flagpole are Dish, T-Mobile, Verizon Wireless, AT&T, and public safety antennas at varying elevations. The maximum exposure to radio-frequency emissions from the Dish, T-Mobile, Verizon Wireless, AT&T, and public safety equipment will be compliant with FCC exposure limits at all accessible locations including the rooftops of the planned development. **Using upper limit assumptions for the Dish, T-Mobile, Verizon Wireless, AT&T, and public safety equipment configurations, the cumulative radio-frequency exposure levels would be less than 0.5% of the applicable FCC standard at all ground level locations of public access. All rooftops and other elevated positions of the proposed multi-family development will also be compliant with the applicable FCC standard.** Figures 1 through 4 below specifically illustrate the anticipated exposure levels in areas surrounding and on the building rooftops of the proposed development. All exposure levels have been calculated using the methods prescribed in FCC Office of Engineering and Technology (OET) Bulletin 65 "Evaluating Compliance with FCC Guidelines for Human Exposure to Radio-frequency Electromagnetic Fields" utilizing the Roofmaster® software package manufactured by Waterford Consultants. Signal

attenuation due to environmental clutter such as buildings, trees, and roadways has been ignored which will overestimate actual power densities.

Applicability of the National Telecommunications Act of 1996

This Act states that "no state or local government or instrumentality thereof may regulate the placement, construction, and modification of personal wireless service facilities on the basis of the environmental effects of radio-frequency emissions to the extent that such facilities comply with the (Federal Communications) Commission's regulations concerning such emissions". As indicated above, this proposed facility will be in full compliance with the FCC's emissions standards and as such is beyond regulation in that regard.

Technical Parameters of Consideration

Within the stealth sheathing enclosure of the flagpole exist eight (8) elevations of antennas installed by Dish, T-Mobile, Verizon Wireless, AT&T, and Mendham Borough public safety. The above calculations were based on the equipment configuration information furnished by representatives of Phoenix Tower. Specifically, Dish has installed three (3) panel-style antennas with a centerline height of 135' above grade with antenna azimuths evenly spaced in the horizontal plane with respect to true north. Transmitting through these antennas are up to four (4) 5GNR transmit paths in the 600 MHz band (per sector) at a cumulative maximum of 120 watts, up to four (4) 5GNR transmit paths in the AWS-4 band (per sector) at a cumulative maximum of 160 watts, and up to four (4) 5GNR transmit paths in the AWS band (per sector) at a cumulative maximum of 240 watts. T-Mobile has installed three (3) panel-style antennas with a centerline height of 126' above grade and three (3) panel-style antennas with a centerline height of 118' above grade with antenna azimuths evenly spaced in the horizontal plane with respect to true north. Transmitting through these antennas are up to four (4) LTE transmit paths in the 700 MHz band (per sector) at a cumulative maximum of 160 watts, four (4) LTE / 5GNR transmit paths in the 600 MHz band (per sector) at a cumulative maximum of 160 watts, four (4) LTE transmit paths in the 1900 MHz band (per sector) at a cumulative maximum of 160 watts, four (4) LTE transmit paths in the 2100 MHz band (per sector) at a cumulative maximum of 160 watts (per sector), and four (4) 5GNR transmit paths in the 2500 MHz band (per sector) at a cumulative maximum of 320 watts. Verizon Wireless has installed three (3) panel-style antennas with a centerline height of 111' above grade and three (3) panel-style antennas with a centerline height of 105' above grade with antenna azimuths evenly spaced in the horizontal plane with respect to true north. Transmitting through these antennas are up to four (4) LTE transmit paths in the 700 MHz band (per sector) at a cumulative maximum of 160 watts, four (4) LTE / 5GNR transmit paths in the 850 MHz band (per sector) at a cumulative maximum of 160 watts, four (4) LTE transmit paths in the 1900 MHz band (per sector) at a cumulative maximum of 160 watts, and four (4) LTE transmit paths in the 2100 MHz band (per sector) at a cumulative maximum of 160 watts (per sector). AT&T has installed three (3) panel-style antennas with a centerline height of 99' above grade and

three (3) panel-style antennas with a centerline height of 93' above grade with antenna azimuths evenly spaced in the horizontal plane with respect to true north. Transmitting through these antennas are up to twelve (12) LTE transmit paths in the 700 MHz band (per sector) at a cumulative maximum of 300 watts, four (4) LTE / 5GNR transmit paths in the 850 MHz band (per sector) at a cumulative maximum of 240 watts, four (4) LTE / 5GNR transmit paths in the 1900 MHz band (per sector) at a cumulative maximum of 240 watts, four (4) LTE / 5GNR transmit paths in the 2100 MHz band (per sector) at a cumulative maximum of 240 watts (per sector), and four (4) LTE transmit paths in the 2300 MHz band (per sector) at a cumulative maximum of 100 watts. Transmitting through the single public safety antenna at 60' above grade are up to eight (8) FM Land Mobile radios in the 450 MHz band at 17 watts per radio.

Background Information

In 1985, the FCC first adopted guidelines to be used for evaluating human exposure to RF emissions. The FCC revised and updated these guidelines on August 1, 1996, as a result of a rule-making proceeding initiated in 1993. The new guidelines incorporate limits for Maximum Permissible Exposure (MPE) in terms of electric and magnetic field strength and power density for transmitters operating at frequencies between 300 kHz and 100 GHz.

The FCC's MPE limits are based on exposure limits recommended by the National Council on Radiation Protection and Measurements (NCRP) and, over a wide range of frequencies, the exposure limits were developed by the Institute of Electrical and Electronics Engineers, Inc., (IEEE) and adopted by the American National Standards Institute (ANSI) to replace the 1982 ANSI guidelines. Limits for localized absorption are based on recommendations of both ANSI/IEEE and NCRP.

The FCC's limits, and the NCRP and ANSI/IEEE limits on which they are based, are derived from exposure criteria quantified in terms of specific absorption rate (SAR). The basis for these limits is a whole-body averaged SAR threshold level of 4 watts per kilogram (4 W/kg), as averaged over the entire mass of the body, above which expert organizations have determined that potentially hazardous exposures may occur. The MPE limits are derived by incorporating safety factors that lead, in some cases, to limits that are more conservative than the limits originally adopted by the FCC in 1985. Where more conservative limits exist, they do not arise from a fundamental change in the RF safety criteria for whole-body averaged SAR, but from a precautionary desire to protect subgroups of the general population who, potentially, may be more at risk.

The FCC exposure limits are also based on data showing that the human body absorbs RF energy at some frequencies more efficiently than at others. The most restrictive limits occur in the frequency range of 30-300 MHz where whole-body absorption of RF energy by human beings is most efficient. At other frequencies, whole-body absorption is less efficient, and consequently, the MPE limits are less restrictive.

MPE limits are defined in terms of power density (units of milliwatts per centimeter squared: mW/cm^2), electric field strength (units of volts per meter: V/m) and magnetic field strength (units of amperes per meter: A/m). The far-field of a transmitting antenna is where the electric field vector (E), the magnetic field vector (H), and the direction of propagation can be considered to be all mutually orthogonal ("plane-wave" conditions).

Occupational / controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits, as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

General population / uncontrolled exposure limits apply to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general public would always be considered under this category when exposure is not employment-related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area. **In the case of this study, the general population exposure limits have been applied as they are the more conservative set of standards.**

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Additional Remarks

The radio-frequency emission levels from Verizon Wireless and other communications base stations are similar to that of other two-way communications systems like those used by police, fire and ambulance personnel. In contrast, commercial broadcast systems like television and radio often transmit at power levels ten times greater or more than the systems discussed above. The FCC exposure limits already include a significant margin of safety. **According to the FCC, the MPE limit has been constructed in such a manner that continuous human exposure to RF fields below 100 percent of the MPE limit is acceptable and safe.**

The biological effects on humans of non-ionizing radio-frequency exposure have been studied extensively now for decades. There have been thousands of reports produced by government agencies, universities, and private research groups that support the standards adopted by the FCC. To date, there have been no credible studies conducted whose results showed evidence of any adverse health effects at the applicable FCC exposure limits.

Sincerely,

Andrew M. Petersohn, P.E.
Registered Professional Engineer
New Jersey license number GE49376

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AVAILABLE UPON
REQUEST

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dBm ENGINEERING, P.C.

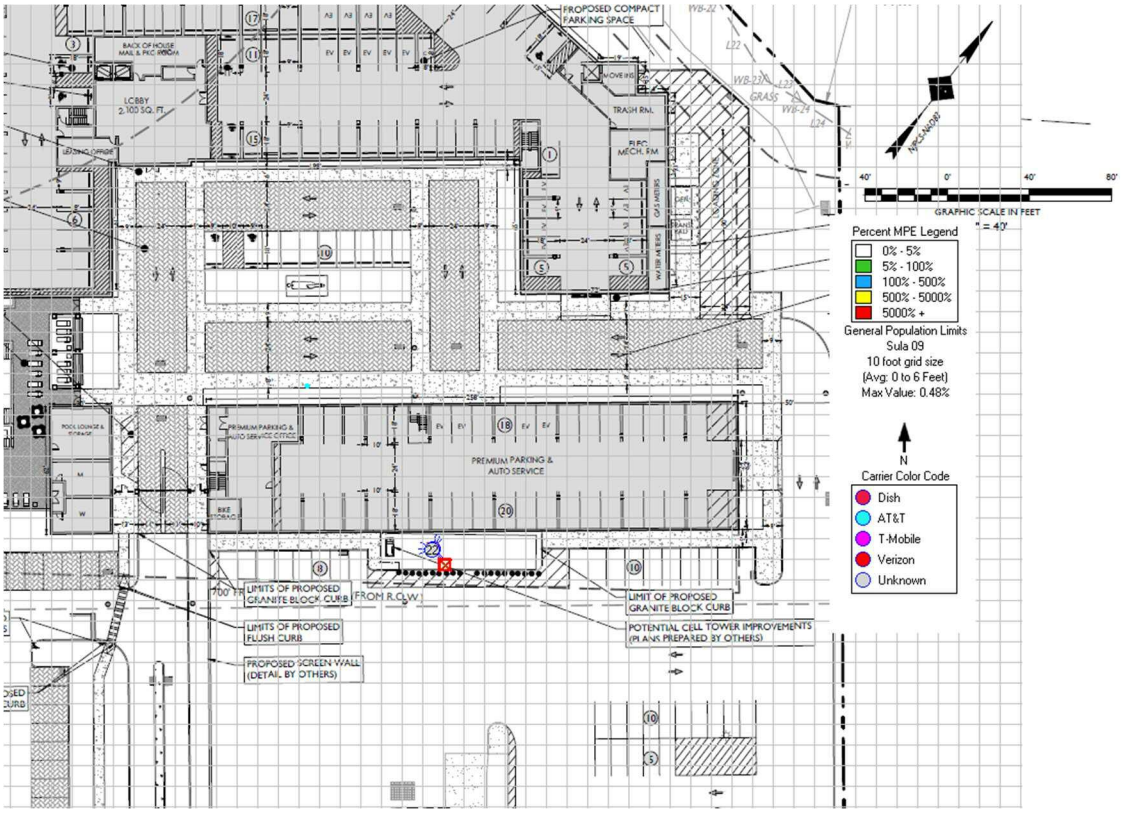

Figure-1 – calculated **ground level** cumulative exposure level surrounding the existing telecommunications facility expressed in percentage of the general public FCC standard.

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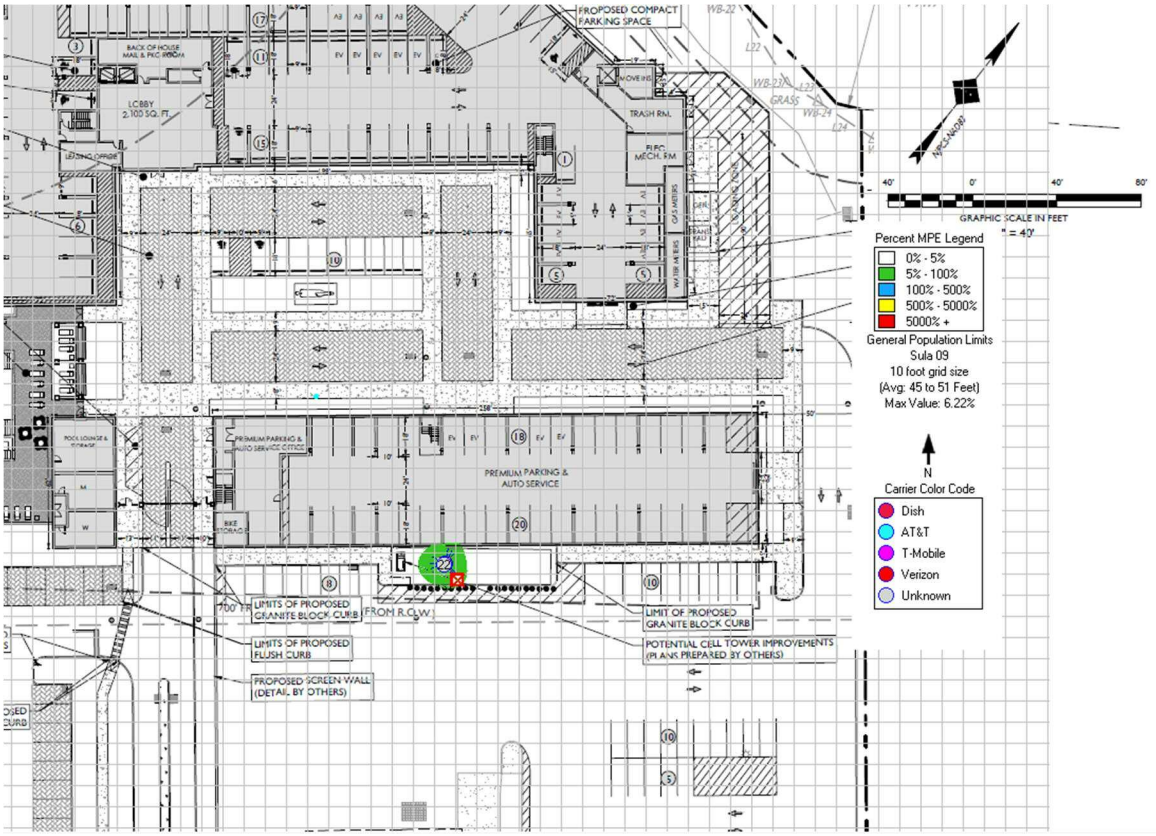

Figure-2 – calculated **cupola peak** (45') elevation of the premium parking and auto service building cumulative exposure level surrounding the existing telecommunications facility expressed in percentage of the general public FCC standard.

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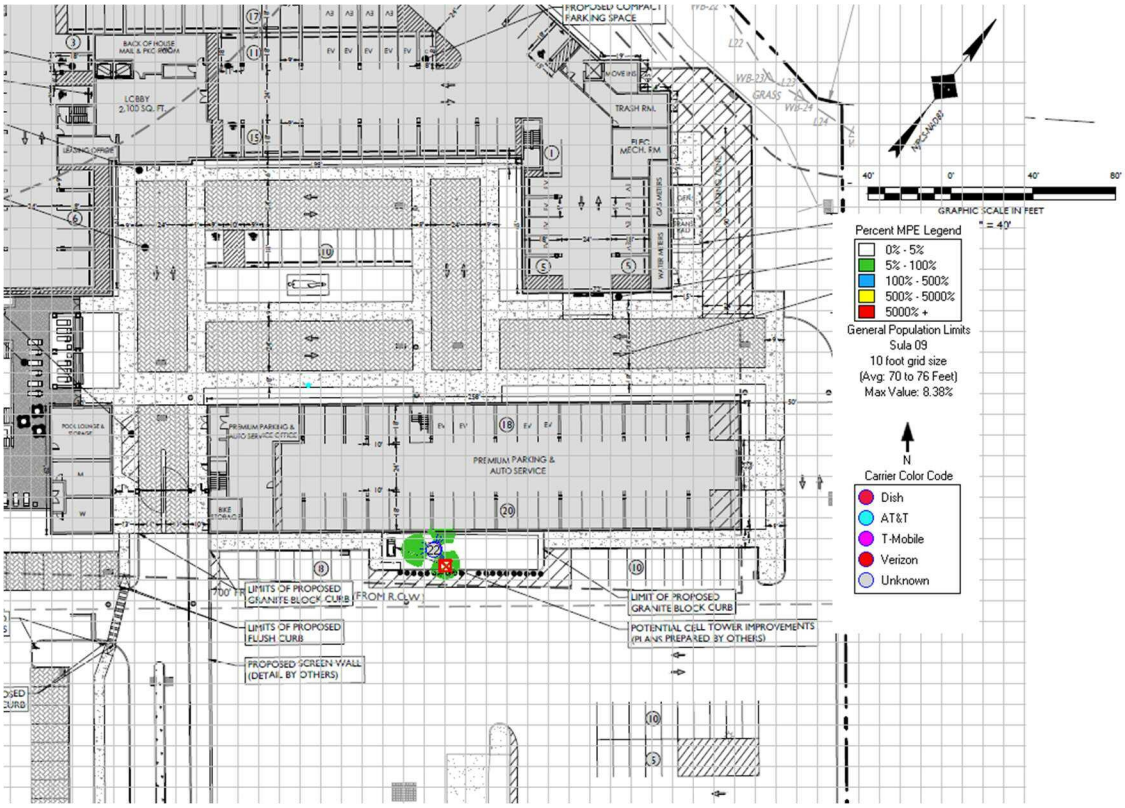

Figure-3 – calculated main **rooftop peak** (70') of multi-family residential building elevation cumulative exposure level surrounding the existing telecommunications facility expressed in percentage of the general public FCC standard.

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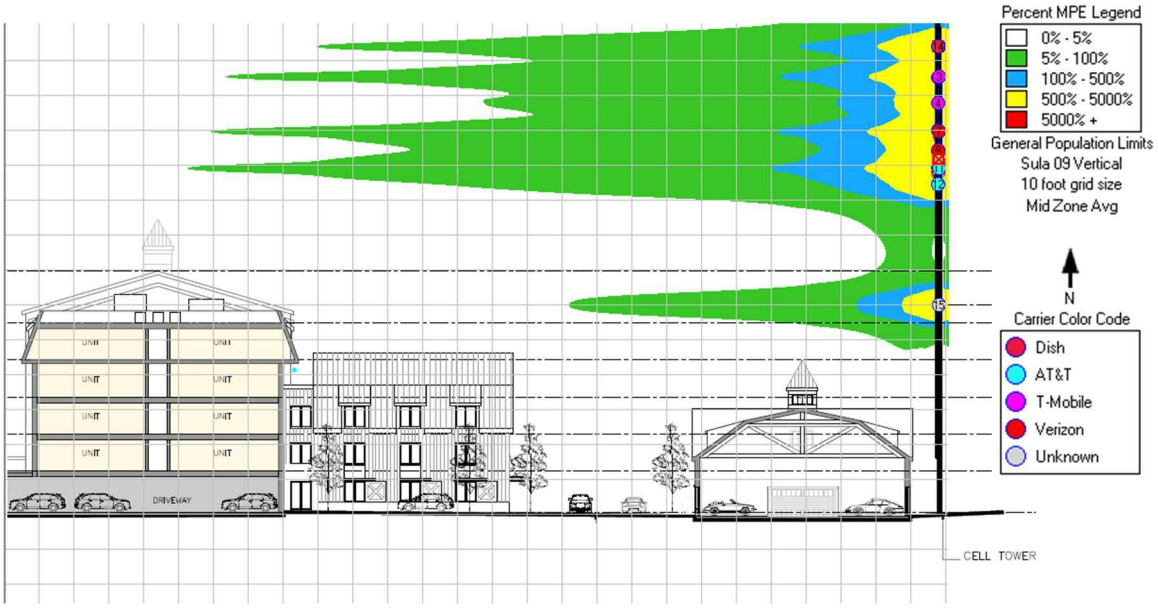

Figure-4 – calculated elevation view exposure level surrounding the existing telecommunications facility expressed in percentage of the general public FCC standard. Only the significantly elevated blue, yellow, and red shaded areas would exceed the general public FCC standard.

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dBm ENGINEERING, P.C.

DECLARATION OF ENGINEER

Andrew M. Petersohn, P.E., hereby states that he is a graduate telecommunications consulting engineer possessing Master and Bachelor Degrees in Electrical Engineering from Lehigh University (2005 and 1999, respectively). His corporation, dBm Engineering, P.C., has been retained by representatives of V-Fee Mendham Apartments to perform a Non-Ionizing Electromagnetic Radiation (NIER) analysis for an existing telecommunications facility in proximity to a proposed residential development.

Mr. Petersohn also asserts that the calculations and/or measurements described in this report were made personally and in a truthful and objective manner. Mr. Petersohn is a Registered Professional Engineer licensed in Pennsylvania, Delaware, Maryland, Virginia, New York, Florida and New Jersey. He has over two decades of engineering experience in the field of wireless communications. Mr. Petersohn is an active member of the National Society of Professional Engineers (NSPE) and the Pennsylvania Society of Professional Engineers (PSPE). Mr. Petersohn further states that all facts and statements contained in the foregoing document are true and accurate to the best of his knowledge.

Andrew M. Petersohn, P.E.
Registered Professional Engineer
New Jersey license number GE49376

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Executed this the 12th day of August, 2024.

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