Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

City of Hudson Planning Board
520 Warren Street
Hudson, NY 12534

May 27, 2021

RE: Structural Design Letter
Verizon Wireless Proposed Rooftop Telecommunications Installation
119 Columbia Street, Hudson, NY 12534

Dear Planning Board Members:

Tectonic Engineering Consultants, Geologists & Land Surveyors, D.P.C. is the engineer of record for this project acting on behalf of the applicant Verizon Wireless. We are issuing this letter to describe the structural design for the new concealed antenna enclosures that we have presented to the Planning Board in the April and May meetings. The new design is shown conceptually in our site plan drawings dated May 18, 2021 and the corresponding photo simulations. The description of the structural design for the new concealment enclosures is based on a review of building structural drawings titled "Providence Hall" prepared by Joseph L. Burke Architect, dated September 10, 1982, and verified via multiple field visits by our office.

For the Alpha and Beta sectors, we have presented a revised design which moves these antennas off the main roof and places them atop the eastern stairwell penthouse. The structural composition of said penthouse consists of precast concrete planks bearing on concrete masonry unit (CMU) block walls with a brick fascia. The CMU block walls continue vertically down through all floors of the building and bear on a concrete foundation. The proposed concealment design for the Alpha and Beta sectors will consist of a structural frame comprised of either steel or fiber reinforced plastic (FRP) with an integral extruded foam concealment wall designed with a faux brick finish to match the existing penthouse façade. The structural frame will feature 4-6 posts that will be mechanically fastened into the top of the penthouse walls and roof slab using base plates and stainless-steel anchors. The antennas will be mounted inside the enclosure, attached to steel or FRP cross bracing that is in turn mechanically fastened to the structural concealment frame using stainless steel hardware.

The design for the Gamma sector is very similar. The structural composition of the building at this location consists of precast concrete planks bearing on CMU walls, which continue through all floors of the building to the concrete foundation. The concealment design here will be

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identical to the Alpha/Beta sector design, being a steel or FRP structural frame with a foam concealment wall with antennas mounted inside on steel or FRP cross bracing. The structural frame will feature 4 posts that will be mechanically fastened into the top of the roof slab using base plates and stainless-steel anchors.

Please note at both locations the existing roof planks will be Xray-scanned at the time of construction to ensure the anchors are drilled into the slab so as to not affect the existing prestressed reinforcing tendons inside the roof planks. This will ensure the flexural integrity of the roof planks is not compromised and therefore the planks will remain capable of supporting their full design load.

Upon the Planning Board's approval of this new concealment design, Tectonic will prepare a full structural analysis report complete with drawings of structural framing plans, details, and notes. The RF concealment wall panel design will be completed by a 3rd party concealment vendor, with said design coordinated by Tectonic to ensure compatibility with the structural frame design being prepared by our office. All components of the wall, frame, and antenna mounting design as well as the anchorage to the building structure will be analyzed per the requirements of the 2020 Building Code of New York State, the Code of the City of Hudson, and the currently adopted standard for antenna supporting structures, ANSI/TIA-222-H. These documents will be submitted to the building department as part of the application for the building permit.

Please note that the revised design submitted to the Planning Board involves changes to the antenna mounts only. The design of the equipment platform located on the main roof remains unchanged at this time. Tectonic previously issued a structural analysis certifying the capacity of the platform and the supporting roof structure in a report dated March 4, 2020. At the time that report was issued a different version (2018) of the Building Code of New York State was in effect. Tectonic will update that report to conform to current code requirements and submit as part of the application for the building permit. Please note in our experience with similar projects, the differences in the code from 2018 to 2020 will not affect the current design of the platform in any way.

With regards to setback concerns and safety of adjoining properties, the concealment enclosures will comply with the Code required setback of 110% of the height of the structure, or 11' in total. Since the enclosures are located within the footprint of the existing building, and said building is a minimum of 48' from the property line, the enclosures are compliant with the setback requirements. Even in the unlikely event the enclosures were to fall off the building (which is impossible because the enclosures will be mechanically fastened to the building structure) they have too much mass and weight to move horizontally a distance greater than 48' and leave the 119 Columbia Street property under any external forces.

We also reviewed the setback requirements considering the possibility that the Planning Board and/or Code Enforcement Department ultimately requires the setback to include the height of the building. In this situation we would have two different setbacks, since the Alpha/Beta sectors are higher than the Gamma sector and equipment platform. The setback requirements would be 110% of 69.2' yielding a setback of 76.12' for Alpha/Beta, and 110% of 59.6' yielding a setback of 65.56' at Gamma and the platform. Unfortunately, there is no location on the property that can meet this setback requirement. Due to the width of the parcel at approximately 117' and considering the width of the enclosures/platform at 10', the maximum setback the equipment could meet if all equipment was moved to the middle of the roof would be 53.5', short of the 65.56' requirement. Please note as well any change in location for the antennas toward the middle of the building would require the elevation of the antennas to be much higher (to maintain proper RF signal) which would make the setback violation worse since setback is relative to structure height.

Should you have any questions, please do not hesitate to contact the undersigned at (518) 783-1630.

Sincerely,
Tectonic Engineering Consultants, Geologists & Land Surveyors, D.P.C.

Steven Matthews

Digitally signed by Steven Matthews
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Reason: I am the author of this document
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Steven M. Matthews, PE
Director of Engineering