

August 18, 2014
File: 147- 214468

Mr. John Ewasutyn
Chairman, Town of Newburgh Planning Board
Old Town Hall
308 Gardnertown Road
Newburgh, New York 12550

**Re: Verizon Permit Application (Co-Location): PB Case No. 2014-13
409 Quaker Street
Wallkill, New York 12589
Technical Review Report**

Dear Mr. Ewasutyn:

This letter report was prepared to summarize HDR's technical review of an application prepared by Young/Sommer, LLC, an agent of Orange County-Poughkeepsie Limited Partnership d/b/a Verizon Wireless (Verizon), to co-locate wireless telephone antennas and associated equipment at the above-referenced monopole location (the site) in the Town of Newburgh, New York. The applicant is seeking a special use permit and site plan approval.

This review includes a general assessment of Verizon's application (focusing on issues related to facility operation, conformance with electromagnetic radiation hazard criteria, and other aspects) by HDR. The review consisted of an analysis of the draft application submittal as received by HDR on April 16, 2014, and the revised (filed) application received on June 2, 2014¹. Additional questions and clarification needs were presented to the applicant at and following the June 19, 2014 Planning Board meeting. This letter report also includes clarifications and reviews of supplemental information received from the applicant in July 2014 (including issues pertaining to the emergency generator and noise assessment; inclusion of subdivision parcels in Verizon's drawings set; and check of structural analysis with equipment specifications shown on the drawings).

This letter report is written for the review and comment of the Town of Newburgh Planning Board. Aside from the Special Use Permit and Site Plan approval, the applicant has not identified the need for variances or other permits. A summary of findings and recommendations is included at the end of this report.

¹ The applicant began assembling application materials in the summer 2013 (with HDR's guidance); however, the formal application submittal did not occur until June 2014.

Background Information

Verizon is proposing to install twelve (12) panel antennas on an existing 150 ft monopole in an AR (Agriculture) zoning district. The existing monopole is located off of Quaker Street, and immediately west of the New York State Thruway. The monopole is owned and operated by Crown Communications, Inc. The proposed centerline height of the Verizon antennas is 112 ft above surrounding grade, below the existing Sprint, Nextel and MetroPCS antenna arrays. Installation of a 10-foot high cable bridge from the south side of the monopole to the equipment shelter is proposed (within the existing ground-based, fenced equipment compound). Cables will run on top of the new cable bridge and will be routed on the outside of the monopole to the proposed panel antennas. Installation of a GPS unit, mounted to a cable bridge support post near the ground, is also proposed.

Construction of a prefabricated 12 ft x 30 ft x 10 ft tall equipment shelter (dedicated to house the Verizon ground-based equipment) is proposed within a leased area near the base of the monopole. Installation of a 50 kW diesel generator within the west side of the proposed equipment shelter is also proposed. Approximately 35 feet of fencing along the south side of the existing ground-based equipment compound will be removed. The proposed Verizon equipment shelter will be constructed outside of the existing equipment compound footprint (to the south, by approximately 11 ft). Verizon proposes installation of a 10-foot high chain link fence with fence fabric, and topped with barbed wire, on the east side of the proposed shelter (to tie into the existing equipment area fencing and prevent access to the site). No fencing is proposed on the south side of the Verizon equipment shelter (as the shelter itself will be enclosed and tie into existing or new security fencing).

A new 12-foot wide gravel access driveway along the west side of the equipment compound is planned to allow for access to the new Verizon equipment shelter, via a new 4-foot wide gate at the southwest corner of the equipment compound. Some vegetation clearing will be required along the south and west sides of the existing equipment compound area to allow construction of the Verizon facility and access drive.

Application Review

Verizon's original application packet for the installation of 12 panel antennas on the existing monopole was received and reviewed for completeness. A review of the application indicated needs for clarifications and revisions:

- Information on the 11 ft extension of the current fencing limit on the southern end of the existing ground-based equipment area;

- Dimensions and specifications for the proposed 50 kW emergency generator, and a description of on-site diesel fuel storage;
- Confirmation of the routing of the proposed coaxial cables.
- Confirmation that separate remote radiohead units (RRHs) are not proposed in addition to the panel antennas.
- Description of the capacity analysis conducted and consumer services that would be provided by the proposed frequencies / equipment.

The above supplemental information was provided in the final (filed) application on June 2, 2014.

The proposed co-location was discussed at the June 19, 2014 Planning Board meeting, and comments were provided to the applicant representative at that time. Technical comments were mainly related to noise associated with the proposed emergency generator and proximity of the monopole to nearby lot lines of an approved subdivision on the subject property (lot lines were not included on the original Verizon Drawings). HDR also provided additional clarification needs based on the structural analysis submitted by the applicant, and apparent discrepancies between the Drawing set and the structural analysis (e.g., antenna types).

HDR received and reviewed additional application information to address the above comments in July and August 2014, including:

- Noise Study completed by NB&C Engineering Services, LLC, dated July 8, 2014 (to further evaluate the proposed emergency generator). Review and discussions with the applicant's noise assessor occurred in July and August 2014.
- Antenna model explanation, dated July 8, 2014.
- Revised Structural Analysis, prepared by Paul J. Ford and Company Structural Engineers, dated July 7, 2014, to illustrate TIA 222-F as the structural standard used.
- Updated drawing set to include recently-approved subdivision parcels.

The supplemental submittals provided clarifications to questions raised on the proposed facility, and responded to the additional information that was requested by HDR. With the supplemental information, the application was deemed to be complete.

Operations and Coverage for Verizon Facility Installation at 409 Quaker Street

The applicant is proposing co-location on the existing 409 Quaker Street monopole to provide capacity relief for its nearby existing wireless transmission facilities (including, “Newburgh HD”, located near Ellis Field in the City of Newburgh; antenna heights at 98 ft above grade; and “Walden Orange”, located at 29 Overlook Terrace; antenna heights noted at 125 ft above grade). Data was provided by the applicant to demonstrate existing and predicted call and data usage by Verizon customers in the area. The trends provided indicate a need for capacity relief in the local Verizon wireless network, and the proposed co-location of Verizon equipment at the Quaker Street monopole will reportedly remedy such existing and pending service shortfalls. The cell site will also enhance Verizon’s voice and data coverage in the local area in the future, including along the NYS Thruway corridor.

Noise Analysis for Verizon Facility Installation at 409 Quaker Street

The applicant is proposing a 50kW emergency diesel generator as part of the proposed Verizon facility. The generator will be situated within the proposed Verizon shelter at the base of the tower. The generator will include a 210 gallon diesel fuel tank with 125% containment. The fuel tank will incorporate electronic leak detection measures which will be hardwired to Verizon Wireless’ operations center. The generator will be used for emergency power needs (i.e., during area power outages to sustain Verizon operations); however, the generator will be routinely tested and operated for short periods of time to confirm that it is in proper working order. As such, a noise analysis was requested of the applicant².

The noise analysis calculated that the maximum sound level (43.75 dBA) at the nearest property line, which is within the Town of Newburgh limits of 56 dBA between 10pm and 8am and 65 dBA between 8am and 10pm. HDR reviewed the analysis approaches, equations, and calculations, and developed questions for the applicant’s noise assessor. It was noted that the analysis did not describe exhaust or sound enclosure details, and did not account for attenuation that is anticipated by the Verizon equipment shelter. Upon discussions with the applicant representative, it was concluded by HDR that the analysis and findings generally appeared to be reasonable for the site (given that the proposed lot line boundaries are in excess of 100 ft from the Verizon equipment shelter, with proposed dwellings greater than 200 ft away). In addition, a specification was provided for an engine exhaust silencer (muffler) which should be installed to decrease sound levels. It is

² The sound level noted on the generator specification sheet was “57.3 DBA @ 23 ft (infinite exhaust)”.

recommended that actual field noise measurements be conducted at specific areas of interest subsequent to emergency generator installation and operation to confirm the noise assessment calculations and demonstrate code compliance.

Conformance with NIER and Other Radiation Hazard Criteria

In order to comply with the Non-Ionizing Electromagnetic Radiation (NIER) hazard criteria, Millennium Engineering (on behalf of the applicant) calculated radio frequency [RF] levels for the proposed installation. The RF analysis included conservative assumptions of potential general public exposures assuming operations from the proposed Verizon antennas.

The calculated RF levels, as provided in the application package, assume a “worst case” situation (i.e., scenario does not account for signal attenuation or interference with vegetation or other obstacles; assumption of maximum antenna outputs). The RF calculations are cumulative and assume that the proposed Verizon facility is operational and also accounts for the existing Sprint/Nextel and MetroPCS wireless operations at the site. The calculations thus include a cumulative RF emissions scenario.

The findings of the exposure analysis were reviewed against the FCC’s general public maximum permissible exposure (MPE) levels. For general public exposures at “ground level” areas near the base of the proposed monopole, the maximum RF level was calculated to be less than 1% of the MPE both for the Verizon installation alone and for the existing and proposed antennas. Thus, general public areas including those locations near the proposed facility were found to be within the applicable MPE.

Aesthetics

Based on the review of the application materials, the Verizon antennas are proposed to be situated below the three other wireless antenna arrays but would be visible from various vantage points in the site area. The overall height of the existing 150 ft tower is not proposed to be increased as part of this application. Cables connecting ground-based equipment and the proposed antennas will be routed from the ground-based equipment, and then along the exterior of the monopole. No tower lighting is required or proposed as part of the Verizon application, and there will not be any significant alteration to the existing monopole configuration.

The Verizon ground-based equipment will be placed within a dedicated equipment shelter (12 ft x 30 ft). The shelter will have 2 doors; one for equipment room access and one for generator room access. A 70 watt exterior light with motion detector adjacent to the

equipment room door is proposed. A generator exhaust vent is also depicted on the proposed shelter drawings.

Structural Analysis

Information pertaining to the structural analyses for the proposed Verizon installation was received in the original and supplemental application submittals. Calculations were provided for the existing and proposed antennas, and considered dead and wind loads on the antennas and stresses imparted to the existing monopole structure. The analysis concluded that the existing structure can accommodate the loadings of the proposed antennas. HDR performed a review of the structural analysis' design considerations, and concurs with the design approach. HDR did not review the structural calculations in detail, as the certification from the Applicant's engineer (as included in the structural analysis) appears adequate for the proposed co-location. The Applicant's engineer maintains full responsibility for the accuracy and adequacy of all aspects of the co-location design, construction, and operation.

Conclusions and Recommendations

Upon review of the original and supplemental materials, the application was deemed to be complete. The following recommendations were identified based on HDR's technical review of the application. If the Verizon application is approved, the following should be considered as conditions of approval.

- Warning signage should be installed by Verizon on the equipment shelter or fence. Security fencing and FCC warning signage should be routinely inspected and maintained at the site by Verizon and the other wireless providers.
- Noise Assessment. Baseline noise field readings will be performed by the applicant subsequent to construction of the Verizon facility. The field readings will be performed at areas around the facility during times the emergency generator is run under normal conditions. Locations of field readings will include the nearest property lines and subdivision parcel lines (i.e., new nearby lot lines [for Lots 2 and 3], as based on Subdivision for William Noble, approved by the Town of Newburgh Planning Board on June 6, 2014 and Orange County Filed Map #158-14, dated June 20, 2014). Subsequent to the field test, a letter report shall be submitted to the Town's Code Compliance Department that describes the noise measurement methods and demonstrates compliance with the Town's ordinance. Should noise levels exceed the Town's criteria, a plan for corrective action shall be detailed in the letter report.

- The proposed panel antennas, mounting structures, and co-axial cables shall be color matched to the existing monopole colors. A matte finish is recommended. This should decrease visual impacts of the proposed facility.
- Operations should be maintained in accordance with the Town's Wireless Ordinance and all other relevant Town codes. Any proposed increase in Verizon's transmit power, number of antennas, antenna sizes, or number/sizes of ground-based equipment cabinets, shall be approved by the Town prior to any modifications.
- The specification for the emergency generator and fuel storage / containment system (attached) should be filed with the local Fire Department or District.

Please contact me if you have any questions on this report.

Sincerely,
Henningson, Durham & Richardson
Architecture & Engineering, P.C.
In Association with HDR Engineering, Inc.



Michael P. Musso, P.E.
Senior Project Engineer

Attachment

cc: M. Donnelly
P. Hines
Code Compliance
Scott Olson (Young/Sommer LLC)