

September 27, 2013

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Chief Michael Gauthier
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RECEIVED

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**PLANNING BOARD
GRAFTON, MA**

Re: Fire antenna attachment request for proposed tower at 104 Creeper Hill Rd, Grafton

Dear Mickey:

The Grafton Fire Department has an opportunity to add a component to its radio system to improve coverage in and around the Wyman-Gordon plant (W-G), which is a known dead spot for both receiving from and transmitting to the Pigeon Hill repeater. US Wireless, Inc./Vertical Bridge Development II, Wireless (U.S Wireless) is proposing to erect a 180' monopole tower for the use of up to four wireless carriers, for the purpose of improving their coverage in the area. The site is located at 104 Creeper Hill Road which is about as far to the northwest in Grafton as you can go and is about 1/3 mile north of W-G.

The Fire radio system did not get the upgrade at the time of construction of the new Fire and Police stations about 10 years ago, at which time the Police radio system was completely replaced. The Fire system lacks a receiver voting system like the PD has, with receiver locations at Pigeon Hill, Brigham Hill, Tufts Veterinary School, and the South Grafton Fire Station, all of which offer very good coverage of the town. (Because of topography, the W-G area is also a poor coverage area for the PD). U.S. Wireless has offered the Town space above and below the wireless carrier area on the tower for the installation of any antenna that may be of benefit to Public Safety services.

To take advantage of this opportunity, I recommend that Grafton Fire Department be able to request the following from U.S. Wireless:

- Attach a dual-dipole directional antenna (Telewave Model ANT450D3-6) at the 100' level for use with a new receiver voting system to be retrofitted to the existing radio system to incorporate the advantage of this tower. This antenna is the same one that is being requested by WoRAD, Incorporated, for the Police Department, and will be shared with the PD.
- Attach a dual-dipole directional antenna (Telewave Model ANT450D3-6) at the 175' level for use with a future "steered" repeater which can be turned on by the Communications Dispatcher or the Fire Chief, to shift the working repeater transmitter from Pigeon Hill to this site for better building penetration of the signal. (This feature must wait until the repeater at Pigeon Hill is upgraded – which should not be considered to be a part of this project). The 175' level is recommended to ensure contact, if this repeater is being used for an incident at W-G, with responding trucks coming from South Grafton and the Center as they pass through the area from Koopman's to the 122/140 split. The antenna must also be spaced more than 20' vertically from the lower receiving antenna for sufficient isolation. Since this infringes on the cellular

- Have space allocated on the tower at the 65' level to mount the area's warning horn mandated because of the G& U Railroad's propane transloading facility.
- Provide 2 outdoor equipment cabinets, placed side-by side or back-to back on a 9' x 6' concrete equipment pad, preferably near an ice bridge, with conduit runs for power and telco lines. The antenna cables should be 7/8" hardline, with one cable to each box. Standard industry site grounding methods should apply.

My understanding is that US Wireless, Inc./Vertical Bridge Development II, LLC will to perform the installation of the antenna equipment on the tower at the above specified heights and prepare the ground based equipment pads. Necessary antenna assembly data and azimuth alignments will be provided when the project is approved.

An equipment list has been furnished to WoRAD, Incorporated, to consolidate it with their list for the Police Department.

RF propagation plots of the specified antenna at the 100' and 175' levels have been included for comparison. The transmitter power was 10 watts and the antenna was the ANT 450D3-6 with a directional pattern aimed south. They appear to be identical, but the coverage on Rt. 140 above and below the Mass. Pike bridge is noticeably improved. This area is circled in red on the plots.

Regards,


Jim Budzyna