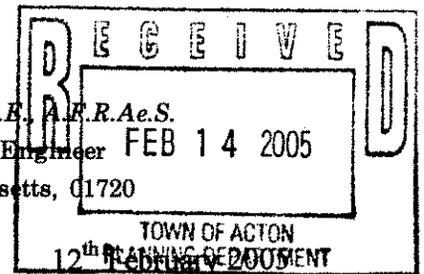


C.J.Beanland M.S.E.E., C.Eng., M.I.E.E., M.I.E.R.E., A.F.R.Ae.S.
Chartered Electrical, Radio & Aeronautical Engineer
17 Deacon Hunt Drive, West Acton, Massachusetts, 01720



Town of Acton Planning Board,
Town Hall,
Acton, Massachusetts.
Attn: Roland Bartl, Town Planner.

Dear Sir,

By way of introducing myself, I'm your "Year 2004 man"!!

I have been reviewing the draft copies of the proposed Zoning Article for Amateur Radio Towers that your office kindly gave me. Thank you. I have some suggestions for consideration by the Planning Board; I ask you to convey them to the appropriate persons. Basically I think a much better bylaw could be written that avoids contentious issues and that is directed to SAFETY issues that the current proposal does not address.

May I state that I have over 60 years of professional experience of radio towers in both the professional and Amateur domain. I am a stickler for safety and have never had an accident. Professionally I've worked on 1,200ft guyed towers, GBZ; 300ft guyed towers, GIX, GIY & GIZ; many 200ft self-supporting towers at British government transmitting stations; numerous guyed wood poles up to 90ft spliced and 40ft single pole, similar to utility poles. I have a 100ft Rohn type 25 tower at my Acton home that dates back to 1964, the year after I brought my family to this country. I have 27 years experience with MITRE Corporation's HF radio work that involved high towers and/or large antennae, some almost 2 miles wide! I hold British G3BVU and American AA1YE Amateur radio licenses. I write from years of experience.

I would like to comment on paragraphs in the revised Draft that you gave me this week.

Para: 3.8.3.6 (c)

It is stated in the *Summary* that a height of 80 feet "accommodates most commercially available Amateur radio towers and should be sufficient for reasonably efficient Amateur radio operations in Acton's moderate topography".

Self-supporting steel towers (Trylon "Titan" models) are readily available to Radio Amateurs up to a height of 96ft. U.S Tower has similar models. Universal aluminium towers are available up to a height of 70ft. In general price, which increases dramatically with tower height, is often a major factor in tower selection. The taller self-supporting towers cost upwards of \$3,000. Additionally their large mass, concrete base is not a trivial cost item.

The classic guyed tower, used by most Amateurs, is the ROHN type 25 series. This consists of 10ft sections that inter-lock with each other. Type 25 can be erected to 190ft, with appropriate guying. A 50% larger version, type 45, (18" triangle versus 12") can be erected up to 240ft, again with appropriate guying. The type 25 typically costs much less than ¼ the price of a similar height self-supporting tower.

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The selection of tower height can be critically dependent on its installed environment. For reasonable antenna efficiency and reception of weak signals, the antenna must be located "in the clear" above houses, trees and other obstructions. In my case, and in many Acton locations, there are 70-80ft high oak and pine trees on the homeowner's Lot. The tall trees provide excellent "cover" to hide the tower and antenna, which is installed above the treetops to avoid the significant signal power loss at VHF, UHF and microwave frequencies. Tree foliage also has considerable signal attenuation at HF frequencies.

I would like to draw your attention to the attached report of a weak signal "Health & Welfare" (medical request) message; received at my radio Club's station W1ON (at MITRE) in Bedford, from a missionary in the Amazon Jungle at Kosoiba, Venezuela. The missionary states his village is located "about 5 days by dugout canoe" from the nearest town!. He has no "Boston Edison" source of electricity. We must assume the few watts of electricity for his very low power radio transmitter, are from solar cells (if he is lucky); more likely it is from a generator driven by a native pedaling a modified bicycle. The signal was very weak even on the large, high gain, beam antenna mounted "in the clear" on the MITRE Club's 90ft tower.

Here at home, I have 80ft oak and pine trees within 20 feet of my tower. My VHF, UHF, microwave and satellite antennae have to be above the treetops. I also have a "weather station" near the top of the tower and antennae for reception of VHF image data signals from the polar orbiting NOAA weather satellites. My tower is not readily visible from our street; the trees hide it. The top of the tower can be seen above the treetops from the Elm Street playing fields, from West Acton centre and from the Hayward Road bridge, if you know the direction in which to look.

The point I want to make is that tower height should not be determined by "what is commercially available". There are many technical and practical factors that have to be considered. My recommendation for the wording of this paragraph should follow the Federal and State recommendations pertaining to accommodating effective communication.

Another point I would like to make in respect of my tower is its use during the first few years of its life. Having recently arrived from England, I had to wait at least 5 years to obtain US citizenship. At that time Federal Law required US citizenship before the FCC issued an Amateur Radio license. I turned my interests to receiving TV station signals from Hartford (Ch3) and Montreal (Ch2). During one evening in the fall of 1966, I received TV programming from the station in Thunder Bay (Port Arthur/Fort William in those days) at the Western end of Lake Superior. I recognized the shops in Main Street and the advertising; we had spent part of our Summer holiday there. You might say my tower was a TV (antenna) tower.

Similarly my tower currently has only antennae for reception of Weather Satellite signals and my weather station on it. My Amateur radio antennae were brought down last Autumn for maintenance and repair. Unfortunately Winter arrived before my Amateur radio antennas were ready to be re-installed. They will go up again this Spring. We might say that currently my tower is a weather station tower, not an "Amateur radio" tower. I have two other towers, both less than 20 feet high, on my Lot. This is a common Amateur radio feature.

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Para 3.8.3.6 (e):

The second point I wish to make is the omission of some SAFETY requirements that could be written into an acceptable Bylaw. In particular I refer to the guys that support guyed towers. The guys have a big responsibility; if one fails the tower will come crashing down probably causing both direct and indirect damage. My recommendation is that the guys installed on "Amateur radio towers" be 7-strand, galvanized steel cable of appropriate size for the expected static and dynamic loads. In general, for Amateur radio towers, 3/16-inch diameter steel cable will suffice. I had 3/16-inch guy cables on my tower for 35 years. I was conservative, replacing them twice during that time period due to surface rust developing in areas where the guys passed through the trees. In several places the rust had started to eat into the cable. Currently I have 1/4 inch diameter, 7-strand galvanized steel guy cables on my tower. A 20-25 year guy replacement policy can be equated with under ground oil tank replacement.

The guy anchors should, ideally, be located as far from the tower as possible. This implies a large Lot for the installation. As the elevation angle of the guys is increased, the tension (and hence the force on the guy) has to be increased to maintain the horizontal positioning force on the tower. Associated with this is a corresponding increase of the downward static load on the tower. (The guys are pulling down). This is not good design.

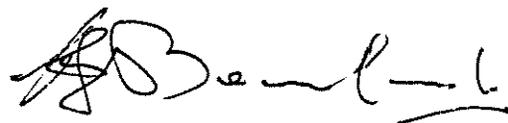
I have no disagreement on the front yard setback distance (equal to the building setback distance); however it is my opinion that the 30 feet setback from the side and rear Lot lines is too much. It would increase the static forces on the guys and the tower, compared to a lesser setback, because of the increased elevation angle of the guys. The guys have only a very small cross sectional area; hence they should not be visibly objectionable to anyone and it is easy to hide their lower sections by suitable planting of shrubs.

The guys and guy anchors are an important part of the installed tower's design. If an anchor gives way, the result is no different from a guy breaking. I believe good engineering practice should dictate all safety features being included in any "tower" Bylaw. A chain is no stronger than its weakest link. Think SAFETY.

Another feature that is sometimes associated with Amateur radio is "radiation hazard". There are Federal standards that all amateur radio stations have to comply with. However these minimal levels of electro-magnetic field strength are considered to be too high by some people. Again, a subjective opinion that has never been theoretically proven. The higher power Amateur VHF, UHF & microwave stations usually have large antennae and are the ones directly involved. Locating the antennae at greater heights can minimize the radiated field strength at ground level, where people are located. This is an argument for high towers. Perhaps the Bylaw should specify a minimum height for the tower, not a maximum height?

If the current Bylaw proposals are intended to regulate antenna/tower aesthetics, they may be acceptable to the Town. However they do not address typical design requirements and important safety features. If either you or the Planning Board would like to discuss my Bylaw proposals with me, I will be pleased to do so. I am usually available most days and evenings.

(978) 263-2145.

A handwritten signature in black ink, appearing to read "A. B. Bell". The signature is stylized and written in a cursive-like font.

To: "David G. Willard" <doc@mitre.org>
From: John <aalye@amsat.org>
Subject: Re: [Fwd: URGENT MEDICAL]
Cc:
Bcc:

At 16:23 2/5/05 -0500, you wrote:

>A message sent via our PMBO, W1ON. de DoCReturn-path: <wlon@winlink.org>
>Received: from smtp-bedford.mitre.org (smtp-bedford.mitre.org [192.160.51.144])
> by mailsrv2a.mitre.org
>Date: Sat, 05 Feb 2005 21:23:54 +0000 (GMT)
>From: wlon@winlink.org
>Subject: Re: URGENT MEDICAL
>To: doc@mitre.org
>Message-id: <143311_W1ON@winlink.org>
>Original-recipient: rfc822;doc@mailsrv2a.mitre.org

>
>----- Original Message -----

>Mid: 1938_KB3LCE
>From: KB3LCE
>To: smtp:rjbro@bellsouth.net
>Sent: 2/5/2005 8:41:00 PM
>Subject: URGENT MEDICAL

>
>Hi Dr Brown,

>
>My name is Jim Passeti (YV6/KB3LCE). I am a missionary serving with New Tribes Mission in the Amazon Jungle in a small indian village named Kosoiba, Venezuela on the La Paragua River, several days from medical help.

>
>Today one of the indians (26 y/o, male, 60 kilos) presented with a snakebite to his foot. The type of snake is unknown. The bite which has two puncture marks, about 4cm apart, is just above the first metatarsal-phalangeal joint. It is 24 hours old as 20:04 utc. His indiginous friends had a tourniquet at the knee and the leg was swollen about twice the size up to that point. The patient is hemmoraging from the mouth or gums.

>
>We gave him 5 vials of "Suero Antiofirico" Antivenom at 1900 utc, a tetnus shot, and were thinking he should have an antibiotic to avoid cellulitis but didn't know which antibiotic would have the correct spectrum for this patient. At the moment he is afibralic. Do you think we should give an antibiotic? If so, how much should we give?

>
>What we have on hand is:

>Erythomyacin
>Amoxicillin
>Ampicillin
>Lorabid
>Penicillin

>
>Is there any further treatment we can give him. Our location is about 5 days from the nearest civilized town by dugout canoe.

>
>Thanks for any help you might be able to offer.

>
>Sincerely but Urgently,
>Jim Passeti

>

Return-Path: <owner-mbarc-list@lists.mitre.org>
Date: Tue, 08 Feb 2005 16:25:39 -0500
From: "David G. Willard" <doc@mitre.org>
Organization: The MITRE Corporation
X-Accept-Language: en
To: mbarc-list - MITRE Bedford Amateur Radio <mbarc-list@LISTS.MITRE.ORG>
Subject: [Fwd: Snakebite Update]
Sender: owner-mbarc-list@LISTS.MITRE.ORG
X-Junkmail-Status: score=10/100, host=mr13.mrf.mail.rcn.net
X-Junkmail-SD-Raw: score=unknown, refid=0001.0A090204.42092DF3.001E-A-,
ip=192.160.51.76

Return-path: <wlon@winlink.org>
Received: from smtp-bedford.mitre.org (smtp-bedford.mitre.org [192.160.51.144])
by mailsrv2a.mitre.org
(iPlanet Messaging Server 5.2 HotFix 1.16 (built May 14 2003))
with ESMTP id <OIBL00EWGFFI96@mailsrv2a.mitre.org> for doc@mitre.org; Tue,
08 Feb 2005 07:45:18 -0500 (EST)
Received: from smtp-bedford.mitre.org (localhost.localdomain [127.0.0.1])
by smtp-bedford.mitre.org (8.11.6/8.11.6) with SMTP id j18CjIA14265 for
<doc@mitre.org>; Tue, 08 Feb 2005 07:45:18 -0500
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by smtp-bedford.mitre.org (Postfix) with ESMTP id A9278BF00 for
<doc@mitre.org>; Tue, 08 Feb 2005 07:45:18 -0500 (EST)
Received: from winlink.org (detroit.winlink.org [216.93.58.120])
by smtp-bedford.mitre.org (8.11.6/8.11.6) with SMTP id j18CjI814188 for
<doc@mitre.org>; Tue, 08 Feb 2005 07:45:18 -0500
Date: Tue, 08 Feb 2005 12:45:12 +0000 (GMT)
From: wlon@winlink.org
Subject: Re: Snakebite Update
To: radio@mitre.org
Cc: doc@mitre.org
Message-id: <144695_WLON@winlink.org>
MIME-version: 1.0 (produced by the IP*Works! MIME Component)
Content-type: text/plain
X-MITRE-External: True
X-PMX-Version: 4.7.0.111621, Antispam-Engine: 2.0.2.0, Antispam-Data: 2005.2.8.0
Original-recipient: rfc822;doc@mailsrv2a.mitre.org

----- Original Message -----

Mid: 6367_N7RHH
From: N7RHH
To: KB3LCE
Sent: 2/7/2005 5:26:00 PM
Subject: Re: Snakebite Update

Dear Jim:

Sounds like an wonderful therapeutic triumph. One of the reasons that I became an orthopedic surgeon is because often the results are dramatic and relatively immediate.

Some thoughts - the Erythromycin should be 500 mg THREE TIMES a day - probably 7 days is about right.

If you have long acting penicillin - 1,200,000 of Benzathine Penicillin G should be sufficient in one single dose.

