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521 Autumn Crest Drive, Watertown, WI 53094-5916

Report with comments on proposed WBKY 486' radio tower, Rutland Township, Dane County, Wisconsin.

For: Edge Consulting, Sauk-Prairie, WI

Purpose: My services have been retained by Edge Consulting to provide a "local" engineer's practical first hand knowledge of the region and actual real world experience managing the construction of and maintenance of other nearby towers. And, specifically, to offer insight into ice concerns raised about the proposed construction of the WBKY tower in Rutland Township.

I have studied the original April 10, 2011 Edge Consulting Engineering Report, subsequent Town of Rutland and Dane County actions and the May 6th, 2014 Evans Associates Report.

Remarks herein are based on my 50 years experience (see resume) erecting and maintaining towers with attending lines and antennas. I've maintained equipment on the two tallest towers in Madison, WI. My experience also includes tower site inspections and conversations with site engineers from around the country.

Towers that I've been directly involved with:

Towers constructed:

620' WSJY tower in Fulton Township south of Edgerton, WI.
800' WLJY tower Milladore WI
Towers 400 to 500 feet in Wisconsin, Illinois and Iowa
Towers 200 to 350 feet in Wisconsin and Michigan

Towers with company antennas and lines:

1300' Channel 15 Madison (WZEE – Clear Channel)
1425' Madison Community TV-FM (WIBA-FM – Clear Channel)

Site Visit to the WBKY proposed site, Thursday May 22, 2014:

Utilizing a site map and GPS I went to the exact location of the proposed tower base. From this location site lines for the guy wire runs were viewed. The relative location of any nearby structures was noted. Most of the surrounding area east and south is obstructed by trees beyond the guy points.

The structures visible were closer to Old Stage Road and would be well clear of any ice fall from the proposed tower. What appeared to an observation or deer stand was located across the property line and several hundred feet off the end of the northeast guy run. Any ice fall from this guy run would be directed to the ground by ice breakers and the actual guy anchor at the ground.

Experience and comment on ice falling from towers:

Ice is only slightly lighter than water and tends to drop straight down. Guy wires can form ice and when it melts it tends to slide down the guy wires. The WBKY construction proposes ice breakers every 100 feet which will break ice into small pieces. Frankly, this is far in excess of need especially considering where this tower is proposed to be situated. That said, these added precautions should certainly further alleviate any concerns.

When weather conditions produce ice, the tower structure itself may build up a layer of ice which will either evaporate or shed. Within the industry, towers under 500' are on the lower end of potential ice issues. As a practical matter, ice from a tower of this height, based on my experience, does not land more than 50 percent of height distance from the base or directly under the guy wires.

Tower structure safety by design:

Since the 1960's tower design has been regulated by the EIA (Electronic Industry Association) standards under ANSI (American National Standards Institute)/TIA (Telecommunications Industry Association) Standard 222. This standard is revised about every ten years and is now in revision G. The proposed tower will meet the current ANSI/TIA-222-G standard.

WMTV Ice Incident

In March of 2011 a portion of the Madison Beltline Highway was affected by falling ice from the 1300 foot WMTV tower. The center of the Beltline is less than 500 feet at its nearest proximity to the tower base. The WMTV tower has a face width, three ways, of 10 feet (120 inches) and is 11 feet (132 inches) at the guy wire points. The difference between the WMTV tower and the proposed WBKY tower is vast. In spite of that, it should be noted that ice during the WMTV tower incident fell within 50 percent of the tower height distance from the base.

Final Notes:

A good example that should allay any concerns about the proposed WBKY tower is the long history of the comparable WIBA tower on Fish Hatchery Road. This site was originally a rural setting. It is 60 feet shorter than the proposed WBKY tower but similar in basic construction. While I was Chief Engineer at WIBA we never had issues with ice at this tower. It is important to note that the centers of Lacy Road and Fish Hatchery Road are 420 feet and 460 feet from the tower base respectively. Two houses are within 515 feet of the base. Ice fall has been a non-issue.

From a public safety stand point, the proposed WBKY tower site is quite enviable. This tower would be more than twice the height distance from any occupied structure (except the observation or deer stand). Other than technicians maintaining the structure and related equipment inside the transmitter building, the site is well away from any human activity. Only a planting or harvesting tractor should come near it. In addition, because it is near an operating gravel pit, anyone within the vicinity should naturally have enhanced public safety awareness. It would be built to the latest TIA-222-G standards and include many extra ice breakers which are not required by the standards.

In summation, any person, using reasonable judgment, doesn't stand under large icicles, roofs with standing ice or snow and towers after an ice storm. In the case of the proposed WBKY tower, an individual taking such risk during an actual ice storm would first have to trespass onto the site itself.

This report was prepared, May 27, 2014, by Clifford J Groth. I take responsibility for the accuracy of facts in the report. All items are factual to my best knowledge.

Sincerely,

5-27-14

Clifford J. Groth, SRE Date

Clifford J. Groth

Senior Radio Engineer

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Experience: Over 50 years as a radio broadcast engineer/consultant

2009 – Present (Post Retirement) a consultant in broadcast and audio related fields. Clients NRG Media, Good Karma Broadcasting, WI Broadcasters Association, Learfield Networks plus commercial video/sound

2004 – 2009 Retired as Chief Engineer - Clear Channel Radio Group, Madison, WI

1964 – 2004 Chief Engineer to Vice President Engineering for Goetz Radio Group, Director of Engineering for Marathon Media the subsequent owner and Regional Engineer for New Radio Group the present owner.

1964 – 1976 Owner of Broadcast Electronics Service serving broadcast stations and providing commercial audio service/installation. Business purchased by Goetz Broadcasting and operated as part of the Goetz Group. Clients included over 75 radio stations and numerous commercial installations.

1958 – 1964 Technician/Operator WTTN Radio, Watertown, WI. Continued as Chief Engineer/Contractor after 1964.

Education: Graduate Watertown High School (1961)
Attended Milwaukee School of Engineering and UW Whitewater
Cleveland Institute Correspondence School for First Class FCC license (1964)
National Association of Broadcasters (NAB) – Engineering Management and AM Directional Antenna Seminars
Note: Taught MATC Electronics Class in Watertown & Lake Mills, WI (five years)

Qualifications:

Holder of an FCC General Class FCC License – obtained the FCC 1st Class Radio Telephone License in 1964 (this was revised to the General Class)
AM Directional Antenna Systems (constructed four complex arrays and aligned many others)
Broadcast studio, transmitter and tower installations. (throughout the Midwest)
Wisconsin Broadcasters Association - IBIP Inspector for FCC Compliance
Set up and balanced complex audio installations in studios and larger venues.
Proficient with all Microsoft operating systems plus special broadcast software.
Set up and operated PC Networks using multiple servers (Novell & Windows)

Affiliations: Society of Broadcast Engineers (SBE) – CSRE, CPBE, Madison #24 Chair
Wisconsin Broadcasters Association - 13 yrs on Broadcast Clinic Committee

Updated - May 2014