BBS MEMO

Ohio Board of Building Standards January 5, 2012 6606 Tussing Road, P.O. Box 4009, Reynoldsburg, Ohio 43068-9009

CELLULAR TOWER STRUCTURE CLASSIFICATION

With the recent adoption of the 2009-based OBC, OMC, and OPC it is perhaps a good time to examine the interpretation of a referenced standard that seems to vary across the state. This BBS Memo is being issued to promote a uniform understanding of the standard and promote a consistent application of its requirements. OBC Section 3108 is succinct in its requirements and reads as follows:

SECTION 3108
TELECOMMUNICATION AND BROADCAST TOWERS

3108.1 General. Towers shall be designed and constructed in accordance with the provisions of TIA-222.

Exception: Single free-standing poles used to support antennas not greater than 75 feet (22 860 mm), measured from the top of the pole to grade, shall not be required to be noncombustible.

3108.2 Location and access. Towers shall be located such that guy wires and other accessories shall not cross or encroach upon any street or other public space, or over above-ground electric utility lines, or encroach upon any privately owned property without the written consent of the owner of the encroached-upon property, space or above-ground electric utility lines. Towers shall be equipped with climbing and working facilities in compliance with TIA-222. Access to the tower sites shall be limited as required by applicable OSHA, FCC and EPA regulations.

To be constructed in accordance with TIA-222 (*Telecommunications Industry Association – Structural Standards for Steel Antenna Towers and Antenna Supporting Structures*), each tower, among other requirements such as those that address tower locations and proximity to other structures, be classified by the designer according to its intended use and location so as to determine load factors used in the tower's design. There are three structural classifications in the standard; Class I, Class II, and Class III structures. Each classification brings with it different nominal wind, ice, and earthquake loads. These classifications reflect the tower's importance based upon the type of service the tower will provide and the consequences of failure.

Class I: Structures described in TIA-222 Table 2-1 as, "Structures that due to height, use or location represent a low hazard to human life and damage to property in the event of failure and/or used for services that are optional and/or where a delay in returning the service would be acceptable."

Class II: Structures described as, "Structures that due to height, use or location represent a substantial hazard to human life and/or damage to property in the event of failure and/or used for services that may be provided by other means."

Class III: Structures described as, "Structures that due to height, use or location represent a high hazard to human life and/or damage to property in the event of failure and/or used primarily for essential communications."

These classifications are further explained in Annex A in the standard as follows:

Class I: "Structures used for services that are optional or where a delay in returning the services would be acceptable such as: residential wireless and conventional 2-way radio communications; television, radio and scanner reception; wireless cable; amateur and CB radio communications."

Class II: "Structures used for services that may be provided by other means such as: commercial wireless communications; television and radio broadcasting; cellular, PCS, CATV, and microwave communications."

Class III: "Structures used primarily for essential communications such as: civil or national defense; emergency, rescue or disaster operations; military and navigation facilities."

The standard makes it clear that the structural classification is established based upon two considerations: consequences of structural failure and type of service provided. Consequences of failure are based upon tower size and location that could result in low, substantial, or high hazard to human life and property. Types of services are classified as those that are optional where a delay in restoration is acceptable, those that are able to be provided by other means, and those that are essential for defense or disaster response.

Class III towers are those used primarily for national defense, military, navigation, and disaster response (type of service provided) and, because of size and location, consequences are more serious if the tower fails. The standard is also clear that television broadcasting, radio broadcasting, community access TV, cellular service, and microwave communications are generally provided using Class II structures, even though there may be storm alerts given or 911 calls made using these services. Because these services, however, can be provided by other means, they should not be confused with civil or national defense, emergency, rescue, disaster operations, or military and navigation communications. Because of the size and location of a Class II tower, the consequences of tower failure, while substantial, are not as extensive as Class III towers.

There may be situations in which towers combine emergency, rescue, disaster operations, or national defense communications with television, radio, and cellular communications services on the same tower. There may be designs of high importance structures such as emergency management communications centers, civil or national defense centers, disaster response hospitals that incorporate communication towers that need to be designed to the higher Class III requirements.

When these communications facilities are designed for services such as commercial wireless communications, television and radio broadcasting, cellular, personal communication services, community access television, and microwave communications, they are intended to be designed as Class II towers and the information submitted to the building department should reflect this classification. When building departments are unsure in their understanding of the assignment of a structural class and require that the structure comply with an incorrect class, costs for obtaining approvals, constructing, and installing these towers can be unfairly increased.