

**Approved by General Counsel**

TR-14 Meeting Report

Date(s): 04/17/2013 - 04/23/2013

Location: Virtual (conference call, web conference, etc.)

Approved: 08/09/2013



Approved by TIA General Counsel 8/9/13

## Point to Point Communications Systems Steering Non-Formulating Committee Meeting Report For TR-14 (<http://www.tiaonline.org/all-standards/committees/tr-14>)

Date: April 17, 2013 (Steering Committee Meeting)

Location: Teleconference

Attendants: John Erichsen, PE, SE, Chair  
Mark Malouf, PE, Vice-Chair  
Bryan Lanier, PE, SE, Secretary  
David Brinker, PE, SE, Editorial Committee  
John Wahba, PhD, PE, Editorial Committee  
Stephen Yeo, PE, Editorial Committee  
Marianna Kramarikova, Manager, Technology & Standards

Meeting during this time commented on the following issues:

- Proposal by steering committee to create addendum 5, in place of Revision H, to incorporate wind map changes from ASCE7-10. Specifically, this relates to the change from a single 50 year design wind, influenced by load and importance factors, to strength level ultimate windspeeds of varying reoccurrence based on risk categories. Benchmarks to achieve this addendum include:
  - Project must be created.
  - Meeting or teleconference with majority of TIA committee members present to officially open project and approve.
  - Date for this conference likely will be in June.
  - Due date for Addendum 5 needs to be early August to approve and prepare for inclusion with the 2015 International Building Code, ballot must be prepared by the end of the year.
  - Information from Applied Technology Council website (<https://www.atcouncil.org/>), in conjunction with Tower Numerics (<http://www.towernx.com/about.html>) will be utilized to specifically reference ultimate windspeeds, as opposed to previous edition charts.
- Update by Mark Malouf regarding subtask committees.

Emails have gone out to various subtask committee chairs regarding various sections of the upcoming Revision H standard, as well as those whose role affects addendum 5. Teleconferences between the subtask committee chairs and those assisting will be maintained and managed by the subtask committee chair. TIA has provided access to their GoToMeeting account (<http://www.gotomeeting.com/fec/>) to facilitate these meetings.

The editorial committee's role during this is as follows:



- Be a resource and manage the progress and direction of the subcommittee's work, specifically to ensure a cohesive editorial content with technical consistency.
  - Edit the language used in the standard to ensure clarity, cohesiveness and objectivity.
  - Ensure no conflicting code requirements.
  - Ensure draft is compliant with TIA and ANSI standards, specially their engineering manuals.
  - Categorize all comments by committee members and the public and ensure they are reviewed and responded on accordingly. These comments are to be provided to the main committee for review prior to, during and after ballot.
  - Prepare final documents to TIA for balloting and publishing.
  - Provide responses to "Requests for Interpretations."
- Gain in membership of various individuals / firms:
    - James Westbrook, James Westbrook & Associates, LLC (<http://jwallc.net/>)
  - Specific honor / recognition for Simon Weisman's efforts within TIA during his tenure.

John, Mark and Marianna will determine appropriate honor / recognition for Simon's efforts and present at the next official committee meeting.

- Further discussion of Wind Turbines / AWEA from Brian Reese, specifically in working with Jomaa Ben Hassine, who is working with the IEC TC-88 PT06 committee regarding developing a new IEC standard called "Wind Turbines: Tower and Foundation Design."

The TR-14 committee will continue it's work / relationship with AWEA as is currently present. Nothing further regarding specific work with the IEC TC-88 PT06 committee. Addendum 4, which provides guidance for Small Wind Turbines, will continue as planned.

- Comments from Madison Batt regarding IBC submittal.

No comments from Madison Batt regarding IBC at this time.

- Spanish Translation of TIA-222-G.

Continued work within translation continues. Specifically, checking the submitted translation via additional sources for accuracy is being completed now.

FAQ Requests and Clarifications



- Don't think this was official submitted to the FAQ, but we've been asked to comment on the following, from someone within Kimley-Horn Associates:
  - Is there a list of states that have adopted TIA-222-G? Is this information even available and can it be distributed?
  - Will the TIA-222-G standard publish were it is generally accepted?
  - Would participation in TR-14 help gain this information?

The committee is not aware of a nationally recognized compilation of the jurisdictions that have adopted TIA-222-G. The committee does not anticipate creating a task group to accumulate this information. The IBC maintains a compilation of jurisdictions that have adopted the various IBC revisions. TIA-222-G was adopted in the 2007 supplement of the 2006 IBC.

<http://www.iccsafe.org/gr/Pages/adoptions.aspx>

- Request: Section 3.0 - Analysis:  
Section 3.6.2 note 1 regarding pattern loading and tower cantilevers Consider cantilevers that are very short relative to the span between the top two guy levels; for example, a 9' cantilever above a 60' span, or a 30' cantilever above a 200' span (both of those examples, the cantilevers are 15% of the span below, and their length happens to be less than three times the tower face width). This seems somewhat similar to the situation covered by note 3, where it is clearly pointless to consider a short span between two guy elevations as an independent span. In the case of note 3, "short span" length is defined as three times the face width. Note that those cantilevers are also short relative to the vertical scale of turbulence or correlation length (roughly 165 to 200 feet according to Gerstoft & Davenport, 1986, "A Simplified Method for Dynamic Analysis of A Guyed Mast.") Also, applying the mean wind to a short cantilever and the full wind to the rest of the tower is practically no different than applying the full wind to the entire tower (which 222-G does not require for towers greater than 450 ft in height). The question is: for towers greater than 450 ft in height, would it be acceptable to treat short cantilevers as part of the span between the top two guy levels? For example, in load case 1, the mean wind pressure would be applied to the short cantilever and the span between the top two guy levels, and in load case 2 the mean wind would be on the span between the 2nd and 3rd guy levels from the top, etc.

A short span cantilever may not govern the results. However the requirement to continue pattern loading for a distance equal to 1/3<sup>rd</sup> the height of the structure ensures that the intent of this section is satisfied. The exception in Note 3 was intended to apply to masts with double guys (guy separated by a very short vertical distance).

- Request: Miscellaneous:  
Approximately when will the next revision or amendment to 222 be? What are the top two or three major changes being contemplated? Will 222 be aligned with ASCE 7-2010 (yes, I'm aware of the FAQ related to this)? Has there been any discussion of aligning 222 wind pattern provisions with those of EN 1993-3-1 and C37?

The current direction is to publish an Addendum to address the wind map changes in ASCE 7-2010. This Addendum is anticipated to be published in the next 18 to 24 months. Revision H is anticipated

to be published in the next five years. The EN 1993-3-1 and CSA S37 were considered in the development of the pattern loading methodology.

- Request: Section 13.0 - Plans, Assembly Tolerances and Marking:

I have a tower for which the plumb and twist was recently taken by a registered surveyor. The initial Plumb and twist for the first two sections are out by a significant amount. The first two sections were stick built and it looks like the concrete foundation is not level. Is there an exemption to cover this?

No, the Standard does not include such an exemption.

- Request: Section 4.0 - Design Strength of Structural Steel:

In Section 4.4.1 of TIA/EIA-222-G December 2009 the minimum bracing resistance (Ps) is given an upper and lower limit. The lower limit relates to the 1.5% requirement in 222-F Sec. 3.1.13. However what is the purpose for the upper limit of  $2.5\%F_s$ ?

Research indicates that the force required to provide restraint does not increase beyond 2.5% as the slenderness ratio of the supported member increases beyond 120.

- Request: Section 2.0 - Loads:

Section 3108.1 of the 2012 IBC eliminates the 222-G exceptions related to seismic design and it changes the horizontal extent of escarpments. Did the 222-G committee submit comments on those two proposed provisions during the development of 2012? If so, what were the comments? If not, does the committee agree with those provisions?

Yes, the committee did collaborate with the escarpment provisions. Corresponding changes to the escarpment provisions are planned to be addressed in the next Addendum. The committee did not collaborate with the IBC seismic exceptions. The committee believes the exceptions listed in Section 2.7.3 of TIA-222-G remain valid.

- Request: Section 9.0 - Foundations and Anchorages:

Section 9.6 What is the intent of the grade beam, similar device, or other approved method to resist a portion of the base seismic shear? Is it to resist differential foundation displacements during a seismic event, to resist the effects of liquefaction, or both? If differential displacements is a concern, what is the allowable displacement? Does the same force requirement ( $2/3$  of the total base shear) apply for 3-legged and 4-legged structures alike?

The intent of the grade beam is to minimize differential displacement. Liquefaction is a separate site specific concern. The Standard does not specify the acceptable magnitude of differential displacement. The requirement is the same for 3 legged and 4 legged structures.

- Request: Section 9.0 – Foundations and Anchorages:



Per Section 9.6, grade beams are required for lattice tower supported by independent foundations if  $S_s > 1$ . I have two questions regarding how to apply Section 9.6 to design practice.

1. For new tower foundation design – if the earthquake effects on the new tower could be ignored per Section 2.7.3, the requirement of Section 9.6 can be waived or not?
2. For checking the existing tower – per the Code any modification on the existing tower, even only add new appurtenants on the tower, the tower has to be checked by the Code (TIA-222-G). If Section 9.6 is not limited to new tower foundation design, the Section shall be applied to modified lattice tower. In California  $S_s > 1$  at most of tower sites and most of the existing lattice towers are without grade beams to connect the independent foundations together. By that logic, for most of new co-location jobs on existing lattice towers in California, foundation retrofit are required, which involve huge design and construction labor and money. It is reasonable to think that if the existing lattice tower with new appurtenants still satisfies the waive conditions specified in Section 2.7.3, then Section 9.6 will not apply.

1. The exception for providing a grade beam or similar device is when  $S_s$  is less than or equal to 1.0.
2. Yes, existing structures with changed conditions when  $S_s$  is greater than 1 must be upgraded to include a grade beam or similar device.

- Request: Section 9.0 – Foundations and Anchorages:  
A couple of months ago I sent in a question asking about the origin of the 1.35 factor in section 15.5.1. I have not seen my question (or response) posted.

The 1.35 factor represents a common ratio between factored to un-factored reactions and is intended to be used only for a Feasibility Structural Analysis.

This meeting was conducted in accordance with the TIA Legal Guides and Engineering Manual.