Approved by General Counsel

TR-14 Meeting Report

Date(s): 07/09/2013 - 07/26/2013

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

Approved: 08/09/2013

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

Date: July 9, 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:

- Update by Mark Malouf regarding subtask committees. Comments on various questions / suggestions from subcommittees is noted later. Progress of each task group is listed below:

- Gain in membership of various individuals / firms:
  - Ben Ude, Aero Solutions, LLC (http://www.aerosolutionsllc.com/)
  - Leslie Kunkle, Paul J. Ford & Company (http://pjfweb.com/)

TIA-222-G / H Change Proposals

- Proposal by Gregg Fehrman regarding section 7, specifically guy assemblies verbiage.

- Proposal by Gregg Fehrman regarding Ca and Ka relationship with respect to transitional flow zone.

- Proposal by John Erichsen regarding appendix C, stress from microwave tie-backs.

- Proposal by Adam Jones and James Ruedingler regarding antenna equipment loads / design strength requirements.

- Proposal by John Erichsen as follows:

Do you think we should add to Rev. H a passage requiring manufacturers to permanently label pole overlap distance on the exterior of the lower section and to place a mark line at the maximum overlap distance? It is virtually impossible to determine the overlap distance during an inspection when the original pole drawings are unavailable.

- Proposal by Doug Pineo regarding bolt strengths, specially determination consistent with AISC specifications and bolt diameter

- Proposal by Zach Thiemann regarding slip splices.

FAQ Requests and Clarifications

- Section 2.0 – Loads

If Ca=1.5 is used for a rectangular cluster of round lines, can that be considered a sub-critical coefficient, so that Ka can be equal to 1-epsilon, with the 0.6 cap, provided the lines are all in the face zone? The term "sub-critical" only applies to round objects, not square or rectangular, and Ca=1.5 does not seem to be sub-critical coefficient nor a "flat" coefficient. But the edges of the cluster are round, after all.

Transitional or supercritical flow conditions cannot be considered for any cluster, be it an equivalent round, square or rectangular, due to roughness of the cluster. It is acceptable to include Ka (including 1-epsilton, with the 0.6 cap) in the calculation of EPA of a cluster.

- Section 2.0 – Loads

We understand section 2.6.4.1 to apply only to areas that are not listed in App. B or to areas that may have special wind or ice loading that generate higher loads than those specified in App. B. Would it be possible to use section 2.6.4.1 to justify wind or ice loads that are less than those prescribed in App. B?

The basic wind speeds recently published within ASCE7-10 may be used. Refer to FAQ ID Number 1110.

Basic wind speeds less than the basic wind speeds published in ASCE7-10 shall not be used. Site-specific topographic considerations may be used in accordance Section 2.6.6.2 (Category 5).

For special wind regions, estimation of basic wind speeds from regional climatic data, consistent with the procedures outlined in ASCE7-10, Section 26.5.3 and commentary may be used.

- Section 2.0 – Loads

Waveguides, downleads, and other cables are frequently strapped to tower legs. Sometimes there is just one, sometimes there are many. Sometimes they're just on one leg, sometimes on all. TIA-222-G section 2.6.9.1.1 note 5 provides guidance for attachments such as step bolts and similar linear irregularities on round structural members. Is similar linear irregularities intended to cover linear cylindrical objects strapped to tower legs, even though (it seems to me) that they are not at all similar to step bolts and that they will affect wind drag on a tower in a different way than step bolts? If the answer is no, then what section of 222-G deals with this? If this is not in 222-G, then how are one or more linear cylindrical objects strapped to one or more legs supposed to be treated?

Section 2.6.9.1.1, Note 5) addresses the roughness of a round member (i.e. a tower leg) and the increase in wind loading as roughness increases when attachments are attached/strapped directly to the member. The criterion provided is intended to apply to step bolts as well as linear appurtenances (waveguides and downleads) directly attached to a round member. In determining the ratio R_a, only the projected areas of the attachments visible from the direction under consideration are to be included in the calculation. Once the ratio R_a is determined, Notes (a), (b) and (c) define the intended procedure for accounting for the projected areas of the attachments.

- Categories: Section 2.0 – Loads

Should step pegs and safety climb be included in the Ra calculations for determining the appropriate Cf and additional linear appurtenance wind area calculated for TIA-G? It appears that in the transition from TIA-E
to F to G the additional drag to the structure from step pegs and safety climb have already been accounted for.

In TIA-E the force coefficients for tubular pole structures were less than those in TIA-F and TIA-G.

In TIA-E, foot note 3 states that when step bolts… are attached to the outside of a tubular pole structure the Cf factor must be multiplied by 1.3.

TIA-F removed this footnote but increased the force coefficients by 1.3 (except for the subcritical cases for which the force coefficient is 1.2). Presumably the footnote was removed and the values and formulas in
the force coefficient table were revised so that the drag of step pegs and safety climb would be considered in the table rather than by footnote.

TIA-G is using similar force coefficients as TIA-F (about 1.3 times that of TIA-E and presumably accounting for the drag increase due to step pegs and safety climb) but then state to include linear appurtenances
such as ladders… or other similar projections in the Ra calculation. Step pegs and safety climb are not specifically mentioned but would be “similar projections”. If step pegs and safety climb are included in the Ra factor it seems that these linear appurtenances are being double counted when determining the additional drag on the structure.

Based on the above discussion, in the calculation of Ra can the area of step bolts and safety cable be ignored?

The force coefficients (C_f), from Table 2-7 for pole structures account for a degree of attachments commonly attached to communication pole structures, therefore, no increase in C_f is required when the ratio R_a is less than or equal to 0.1. Step bolts are considered in the same manner as linear appurtenances since they are generally applied in a uniform manner over a given length. When determining R_a, the projected area of all linear appurtenances (including waveguides coax, step bolts, etc.) in the direction under consideration are intended to be included in the calculation of R_a. This is required to determine the degree of roughness. When the ratio R_a does not exceed the 0.1 threshold value, the force coefficient for the pole section under consideration is not increased. In this manner,

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step bolts are not double counted. Appurtenances not attached/strapped directly to the pole such as safety cables or ladders are intended to be considered separately for determining wind loads.

- Addendum 1

Section 10.5 of ANSI/TIA-222-G (Addendum 1) states: Connections between a structure and grounding electrodes or grounding anodes or connections between electrodes shall be compatible with the electrodes and be accomplished by leads not smaller in area than 2/0 A.W.G [133,100 circular mils]. Our client's grounding specification for towers requires the use of 2 AWG bare copper wire for the connections between the structure and ground electrodes. The client mandates the use of the smaller 2 AWG wire for the tower connections and tower ground ring as it will be the same gauge used for the entire buried ground system. Why does TIA-222 specify the use of minimum 2/0 cable? Is it permissible to use 2 AWG when mandated by the tower owner?

The 2/0 ground lead was selected as the TIA Standard ground lead based on assumed electrical characteristics of presumptive soil and on durability requirements associated with typical telecommunication site construction. Grounding systems other than TIA standard grounding may be appropriate for site-specific locations when specified and approved by the owner or owner's representative. These grounding systems would be considered as custom grounding systems which may or may not conform to TIA Standard grounding.

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