Agenda Item 650-1115

Title: Correcting References to ASCE 7 for Wind

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Revision: 0

Handled By: Eric Gnade
CB&I, A McDermott Company
14105 S. Route 59
Plainfield, IL 60544-8984
Telephone: 815-439-6476
Email: Eric.Gnade@McDermott.com

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Purpose: Correcting how different versions of ASCE 7 should be referenced for wind design requirements.

Source: Kyle Moelker (CB&I) pointing out an unintended error in the latest API 620 addendum that updated references from ASCE 7-10 to ASCE 7-16, which brought to light how references to ASCE 7 could be improved.

Impact: Ensure current versions of ASCE 7 are properly referenced.

Rationale: Currently, API 650 only references ASCE 7-05 and ASCE 7-10. The proposed changes make it clear what is appropriate for the more current versions of ASCE 7.

Proposed Changes

5.2.1 Loads

k) **wind (*W*):** The design wind speed (*V*) shall be either:

-     the 3-sec gust design wind speed determined from ASCE 7-05 multiplied by √I, Figure 6-1; or
-     the 3-sec gust design wind speed determined from ASCE 7-10, or a later version, for ~~risk~~ occupancy category specified by the Purchaser (Figure 26.5-1A, Figure 26.5-1B, or Figure 26.5-1C) multiplied by 0.78; or
-     the 3-sec gust design wind speed specified by the Purchaser, which shall be a 3-sec gust based on a 2 % annual probability of being exceeded (50-year mean recurrence interval).

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These design wind pressures are in accordance with ASCE 7-05 for wind exposure Category C. As alternatives, pressures may be determined in accordance with:

a)   ASCE 7-05 (exposure category and importance factor provided by Purchaser); or
b)   ASCE 7-10, or a later version, (exposure category and ~~risk~~ occupancy category provided by Purchaser) with either velocity multiplied by 0.78 or the ~~ASCE 7-10~~ pressure multiplied by 0.6; or
c)   a national standard for the specific conditions for the tank being designed.

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NOTE ASCE 7-10, or latest version, wind velocities ~~now~~ have LRFD load factors and ~~risk~~ occupancy (importance factors) built in, whereas API 650 uses the working stress. The 0.78 factor applied to the ASCE 7-10, or a later version, wind speed provides a conversion to working stress levels.