Attendees: **Voting Members:**
- Pete Carrato, Bechtel Corporation, Chair of IT
- Greg Soules, CB&I (PUC Member)
- Bill Scott, AISC Industrial building committee
- Eric Wey, Fluor (*absent*)

**Corresponding Members:**
- Robert Simmons, Petra Seismic/ASHRAE
- Harold Sprague, Parsons
- John Silva, Hilti (PUC Member) (via conference call)
- John Rolfes, Computerized Structural Design (via conference call)

**FEMA/NIBS**
- Jiqiu (JQ) Yuan, NIBS (via conference call)

Discussion:

**General topics:** Not necessarily only applicable to Chapter 15 non-building structures

1) Vertical seismic
   a. V/H ratios
   b. Vertical ground motion
   c. Phase relationship between V and H (V first then H)
   d. Vertical in-structure response
      i. Vertical floor flexibility
   e. Analysis methods for and applicability of vertical excitation
      i. Dictated by a combination of Risk and Seismic Design Category

2) Duration of ground motion
   a. 4 minutes of strong motions vs 30 seconds of strong motion

3) Risk
   a. Should a Category V risk be defined for facilities that need to operate immediately after an event?
4) Reliability
   a. This should be based on a systems approach not a component level.
   b. Is ASCE 7 the correct vehicle to address this?
   c. Engineers work in silos – the structural engineer designs the fire water tank support, the mechanical engineer selects the fire water pump, the electrical engineer designs the motor control center. Is a consistent level of reliability used for all of these activities?

5) Although Section 13.2 does discuss components, their supports and attachments, an overall system reliability assessment is not included.

6) The reliability of anchors design per ACI 318 is not consistent with the reliability of ASCE 7, can this be addressed?
   a. Is it possible to consider cast-in-place anchors to be inherently more reliable than post-installed anchors?

7) Shear break out for typical concrete piers should be revisited.

Topics specific to non-building structures:

1) Reduced seismic for buildings with a short specified design life – ie a waste treatment facility where the amount of waste material is clearly define giving a design life of 5 year and including a plan to decommission the structure.
2) Consider expanding Section 15.5.2 from pipe racks to general distributed systems such as electrical raceway, duct work, etc. Include an expanded commentary with photos of applicable system.
3) Consider adding fiberglass cooling towers to Table 15.4.2. Possibly use an R of 2.
4) Consider adding other structures that have a substantial mechanical component such as air handling units, heat recovery steam generators, etc.
5) Review standards for seismic design of wind turbines.
6) It was agreed to review standards related to docks such as that used in California for Marine Oil Terminals.
7) Consider addressing large concrete equipment foundations such as those for turbine generators, compressors, cokers, etc.
8) Consider addressing material handling system structures such as conveyors, stacker/reclaimers.
9) Consider addressing lattice column structures.
10) Review the applicability of height limits for all types of non-building structures.
11) G. Soules made a presentation on corrugated metal tanks and tanks used in the food (wine) industry.
   a. It was agreed not to “cry over spilled milk” and that food industry tanks are not critical to the mission of ASCE7
   b. Corrugated water storage tanks, especially those for fire water or located in public areas should be limited to Design Category A and B.
12) E. Way was not in attendance so the discussion of large bore pipe structures was tabled.
Referenced Documents:

1) UFC 3-310-04, United Facilities Criteria, Seismic Design of Buildings, DOD
2) GCR 12-917-20, Tentative Framework for Development of Advanced Seismic Design Criteria for New Buildings, NIST
3) ICC-ES AC 156 Acceptance Criteria for Seismic Certification by Shake-Table Testing of Nonstructural Components

Action Items:

1) R. Simmons to contact fiber glass cooling tower vendors to gage their acceptance of an R value of 2.
2) G. Soules to contact B. Manley to determine if AISI has a position on corrugated metal structure and to see if there are contacts among the corrugated bin and tank vendors who would like to provide input to IT6.

Next Meeting:

Telephone conference 1 to 2 hours to discuss large bore piping. Date TBD.