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BOARD OF BUILDING REGULATIONS AND STANDARDS

Geotechnical Advisory Committee (GAC) Meeting Minutes

October 6, 2021

The Division of Professional Licensure Office
1000 Washington Street - Boston, MA 02118

This was a virtual Microsoft Teams meeting.

Roll Call, by GAC Chair:

Chris Erikson, Chair
Scott DiFiore
John Roma
Michael Oakland
Damian Siebert

☒ present ☐ absent
☒ present ☐ absent
☒ present ☐ absent
☒ present ☐ absent
☒ present ☐ absent

Martin Rodick
Jake McManus
James Christensen
William Solberg
Rob Anderson

☒ present ☐ absent
☒ present ☐ absent
☒ present ☐ absent
☒ present ☐ absent
☒ present ☐ absent

General notes on format of these minutes

- *These minutes represent general points discussed during the meeting. The minutes are **not** intended to be a verbatim account of discussions.*
- *Topics as numbered may\may not be in the same order as they appear on the meeting agenda.*
- *The meeting agenda is listed as **EXHIBIT A**; others are listed sequentially as addresses during the meeting.*

1. Review minutes for the GAC September 8, 2021 meeting (EXHIBIT B).

On a **MOTION** by Damian Siebert, seconded by Chris Erikson, it was unanimously agreed, by **Roll Call Vote**, to approve the minutes as submitted.

2. Discuss proposed amendments and new content of 2021 IBC, Chapter 18, for inclusion in the Tenth Edition of the Massachusetts Building Code (780 CMR).

Section Review.

• 1806.4 – Liquefaction.

James Christensen noted that after going through all 351 locations, there were a handful of locations that exceeded the PGA of 0.23g we had been using for the screening figure. Therefore, the maximum PGA value in Region I was revised to be 0.25g which bounds all towns and leaves a small buffer when the PGAs increase when new mapping is published in the future. Consequently, paragraph 2 under Section 1086.4.1 needs to be revised as follows.

Figure 1806.4 is intended to be a screening tool for Site Classes A through D, determined in accordance with section 1613.5.2. The figure is based on Maximum Considered Geometric Mean Earthquake (MCE_G) Peak Ground Accelerations (PGAs) at outcropping Site Class B rock of ~~0.23 g~~ 0.25 g, 0.18 g, and 0.12 g and site amplification factors (F_{PGA}) of ~~1.37~~ 1.35, 1.44, and 1.56, respectively for Site Class D, and a factor of safety of 1.1. Refer to Table



1604.11 or USGS earthquake hazard data for PGA specific to where the site is located. This figure is based on observed behavior of clean sand, and is conservative for other (more silty) materials. Soils that do not screen out using Figure 1806.4 shall be evaluated for liquefaction per section 1803.5.12.

James further described reasons for the changes in a revised memorandum dated October 4, 2021 (**EXHIBIT D**). Additionally, James reviewed Figure 24 and possible revision of the 2.5 safety factor.

Following discussion, members agreed that the factor of safety should remain @ 2.5, but other noted changes should be made. James noted that the PGA table values will be forwarded to the Structural Advisory chair for inclusion in their work.

On a **MOTION** by Chris Erikson, seconded by James Christensen, it was unanimously voted, by **Roll Call Vote**, to approve changes to Section 1806.4 as submitted

Rob Anderson indicated that changes will be incorporate into the most recent Chapter 18 draft and circulated to committee members for a final review.

Once again Chairman Erikson and other committee members thanked James for all his efforts regarding this issue.

- **Ground Improvement.** James Christensen indicated that he discussed the issue with Timothy Siegal of Dan Brown Associates Engineering, Chair of Ground Improvement with DFI. Mr. Siegal specified that work is on-going with regard to code requirements for ground improvement, but he thinks it will be 5 – 10 years before provisions are approved for inclusion in the international codes. Currently, no other states have attempted to draft code requirements. Mr. Siegal thought it was a good idea for the GAC to address the matter. In doing so, he suggested that requirements be broadly defined and include such things as:

- Lateral loading of unreinforced elements;
- Method of analysis as approved by a registered design professional;
- Bearing capacity control safety factors;
- Special inspections; and
- Load testing.

Chairman Erikson noted that his conversations regarding the matter yielded similar comments, suggesting that committee members develop guardrails to follow. Following a lengthy discussion, committee members indicated that code requirements may include:

- Load testing;
- Special Inspections;
- Use of elements in organic soils;
- Seismic reinforcement;
- Specific definition for ground improvement;
- Basis for design;
- Prescriptive bearing pressures for soil improvement;
- Rigid improvement allowable stress;
- Down-drag; and
- Design responsibilities.

Chairman Erikson asked Damian and Martin to assist him with drafting some requirements for at least 3 parameters.

Rob Anderson noted that Office of Public Safety & Inspections (OPSI) staff and other committees are still in process of completing their work and Board members have not called a halt to the process yet. Accordingly, GAC members

agreed to meet on November 17th and December 15th @ 10 am to continue work on draft ground improvement requirements.

3. **Discuss:** **Matters not reasonably anticipated 2 business days in advance of meeting.**
None.
4. **Approve:** **Adjourning the meeting.**

On a **MOTION** by Chris Erikson seconded by Damian Siebert, **by Roll Call Vote**, it was unanimously agreed to adjourn the meeting @ approximately 11:51 pm.

Exhibits.

- A. Meeting Agenda
- B. September 8, 2021 GAC Draft Meeting Minutes.
- C. International Building Code (IBC), Chapter 18 January Draft (*modified as a **WORD** document for clarity*).
- D. Liquefaction Screening Figure 1806.4 Memorandum Revised October 4, 2021.