May 8, 2022
Public Comment to the
Washington State Building Code Council / Building Code Technical Advisory Group (TAG)

Re: Proposed Amendment "Concrete Greenhouse Gas Emissions Reductions" to the International Building Code Section 1903.5 by the New Buildings Institute, dated April 8, 2022

Dear Building Code Technical Advisory Group,

As a registered architect, a LEED AP BD+C and a building professional with over 30 years of experience in sustainable design and sustainable construction, I urge the Building Code Technical Advisory Group, **to reject the amendment to IBC 1903.5 in its current form.**

While this amendment addresses the important need to urgently reduce embodied carbon in concrete, further revisions and coordination with the Washington's structural engineering, concrete suppliers and general contractor stakeholders are required for successful implementation.

Specifically, the following changes and issues below need to be addressed prior to adoption:

1. **Additional exceptions to 1903.5 are needed:**
   Due to constructability requirements and/or the relatively low volume of aggregate displacing cement volume, the following additional applications may exceed the CO2e limits and should be categorically exempted:
   - piles,
   - drilled shafts and
   - shotcrete.

2. **Limits are not regionalized or application-specific:**
   The limits in Table 1903.5.1 use the sole criteria of strength and do not reflect the real-world impacts of varying aggregate quality, application, and constructability requirements of specific applications.

   The source of supplied coarse aggregate varies with project location and the compressive quality of that aggregate impacts the ability (or lack thereof) to reduce cement (and embodied carbon) and still achieve the same required strength.

   Furthermore, the table's defined limits need to account for the interrelationship of the needed initial strength, the required final strength, and the application for which a mix is used. The degree of possible reductions within the same strength class will be defined

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by the application, method of placement and workability needs.

The chart needs more granularity to accurately reflect the impact of local aggregate quality and application impacts on CO2e reductions.

3. **A single value for all concrete 6500 psi f'c and stronger is not appropriate:**
Highrise or atypical projects may require concrete with strengths or 7000, 8000, 10000 or even 12000 psi – each of which have differing abilities to reduce CO2e. Additional limits specific to those higher strength classes are needed.

4. **100-mile limit may not address real-world rural market options:**
Some suppliers may make a business decision not to service jobsite with a 100-mile one-way truck distance limiting the real-world availability to mixes. Reduce the one-way truck distance to 40 miles.

5. **EPDs for 100% of all mixes does not offer needed flexibility for unexpected changes:**
Due to changing supply-chain issues, strikes, and or specialty applications, there may be unforeseen changes of some mix selections during construction; obtaining EPDs for new mixes or for specialty mixes used in small quantities may not be possible prior to final completion. Strongly recommend revising the requirement for EPD collect to cover 90% of all mixes in the project as measured by volume.

6. **Provide a minimum volume or minimum project size subject to this regulation:**
Compliance calculations and monitoring (especially using the Limit Method – Project) will require additional time for construction teams and hence, add cost to the project. To avoid disproportionally burdening small project teams with small labor budgets, exempt projects with less than 100 cubic yards of placed concrete and/or projects with are 20,000 square feet or less of building area.

7. **Documentation submission and impact on Certificate of Occupancy:**
Section 1901.8 requires EPDs, and presumably proof of full compliance using either the Mixture-Limit method or the weighted average Project-Limit method, prior to certificate of occupancy. Is receiving a Certificate of Occupancy contingent of showing compliance with 1901.8? While an enforcement mechanism is understandable, indefinitely withholding a certificate of occupancy due to an unexpected issue with mixes during construction delivered is a disproportionally punitive for the project. Other enforcement methods should be considered.

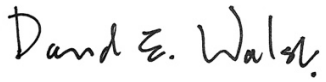
8. **Cost Impacts are more than material costs:**
Item 8 in the amendment analysis states that there are no cost impacts with this amendment, however, there are more dimensions to project cost than the cost of the

concrete mix. In some cases, longer maturity dates – the period needed to reach final strength – may be needed to reduce CO2e to comply. In some applications such as post-tensioned slabs, the time to reach early strength for stressing and reshoring may need to be extended having a knock-on effect of extending pour cycles and the critical path of the project schedule. Longer project schedules do have significant costs, and, in this way, compliance could have a cost impact.

I appreciate the opportunity to provide this public comment for your consideration of this proposed amendment.

Please reject this amendment in its current form and urge the proposer to address the issues noted above for successful implementation.

Respectfully,



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