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Interagency Committee on Sustainability
and Green Procurement
Via email only to: GreenEO4@ogs.ny.gov

The New York Construction Materials Association, Inc. (NYMaterials) is a not-for-profit, statewide trade association representing the business and regulatory interests of companies involved in the production of construction aggregates, ready mixed concrete and hot mix asphalt. These vital building materials are used in literally every construction project in New York. As you are aware, federal and state leaders have identified construction, particularly road and bridge construction, as a key to stimulating the economy. Our operations are aggressively regulated under a host of environmental statutes and regulations, and our record of mitigation and compliance are second to no other industry. In this context, NYMaterials is providing comment on the draft OGS Lower Carbon Concrete Specification and ask they be incorporated into the record of the proceedings.

OGS is attempting to change the way concrete is specified by building on market-common capabilities. It appears the intent is to do this by performance requirements noted in their encouragement to entities section. NYSDOT and commercial interests have performance specs in use currently without citing any prescriptive requirements (besides "approved" materials sources). The proposed language is quite prescriptive by limiting maximum cement content, requiring minimum SCM content, and effectively forcing use of blended aggregates to achieve well graded proportions using multiple sizes.

The following definitions and/or document language requires substantial edits:

- "PLC" or Portland-limestone cement is included in the definitions but not mentioned anywhere else to address the GWP considerations. PLC certainly has lower CO₂ content but nothing in the standard addresses to what level a PLC improves GHG compared to straight cement.
- In definitions SCM's are defined as fly ash, slag, or ground glass. Another location cites SCM use as either fly ash, slag, or both. Later SCM's include silica fume and metakaolin. A number of such inconsistencies exist that should be corrected.
- Pozzolans are defined as SCM's, including ground glass.
- Recycled concrete aggregate included in definitions but not cited elsewhere in the document. What's the benefit to concrete if it's not meant for use in concrete? Why include it in the Concrete CO₂ considerations?
- The document doesn't define that when SCM's are included in a concrete the combination of cement and SCM (or pozzolans) is considered cementitious content. There is inconsistency within the document with the use of the terms SCM's and pozzolans.

Most New York concrete producers have not prepared EDP's for concrete mixes. It is costly and time consuming for the hundreds of mix designs at each facility.

The following comments are directed at Table 1 of page 2 – Specifications:

- CO₂ content of CCCA – CCCA is undefined.
- Fly ash = 0.000. Fly ash is a “waste” product of coal combustion, but it's use in concrete has made it a desirable, and often required, component within concrete to aid in durability. Demand for fly ash is so great that availability is in short supply in many geographic areas. Waste ash from landfills is now being reclaimed – extracted from the landfills and processed. There is clearly a cost and emissions component to the excavation, processing, and trucking of fly ash to concrete producers. Therefore, citing a CO₂ content of 0.0000 is erroneous.
- Silica fume is also a waste product but will have some component of CO₂ included to process the material and transport it.
- Not included in this table is ground glass from the waste stream. Ground glass is not available in commercial quantities but it does require sorting in some cases, processing, storage, and transportation so there must be a CO₂ component to this product.
- As previously noted, no CO₂ content is defined for Portland-Limestone Cement.

Setting cement content limits is a major part of this specification, limiting cement use to 400#/cy for structural applications and 300#/cy for below grade, confined and mass concrete applications. Concerns with setting these limits include:

- Much of the proposed language is based on PANYNJ actions. This assumes that all entities across the state, using a variety of materials, can achieve the same strength and performance characteristics as in the NYC area. While all cements meet ASTM / AASHTO requirements there is still variability in performance. Further, different types of aggregates and/or different sources of the same types of aggregates have shown to have different levels of performance. It is not good engineering practice to implement a single requirement of concrete across the state with a set cement content.
- Alternate mixture designs using 400#/cy or 300#/cy would have to be developed by each producer based on the specific aggregate and admixtures being used at a given concrete producers facility. It is uncertain if these specific cement contents would achieve the desired strength.
- Strength gain of a mixture will change with alterations in cement and overall cementitious content. Use of less cement generally slows the hydration reaction thereby taking longer to achieve a certain strength. The addition of different SCM's in many instances also slows the rate of strength gain. This impacts how quickly the concrete can be put into service. Many projects require accelerated construction and can result in penalties if rate of strength gain is not achieved. More research / evaluation of various mixtures across the state must occur to assure the requirements of this specification are not detrimental to production.
- A one-line sentence says the cement content limit “does not include sidewalks, slabs on grade, or applications that require a final finish.” This is then followed by another bullet allowing that a “contractor may also limit cement content to 300#/cy for other applications.” This statement should be more clearly worded and more prominent since the durability of flatwork tied to the use of lower cement contents may be impacted.

Reduction of percentage of binder, tied to use of well graded aggregates, is cited. Further aggregate concerns are not well considered by this specification.

- While not impossible, blending of aggregates and maintaining uniform gradation characteristics can be difficult and requires processing at one or more locations. There is a CO₂ content associated with processing that is not considered in any analysis.
- The proposed spec cites aggregate quality, requiring 12% magnesium Sulfate soundness loss at 5 cycles. Per a report by W. Skerritt in 2009, Report FHWA/NY/SR-09, some aggregates showed a loss of less than 12% at 5 cycles but often exceeded 18% at 10 cycles (this is the NYSDOT current requirement). This language may allow the use of lesser quality aggregates not on the NYSDOT approved list of sources.
- Definitions cite local aggregate use to reduce GHG emissions. This has been an industry practice / stance for decades, to use locally available resources is a priority to reduce costs and GHG emissions.

Disposal record keeping to determine that a beneficial use has occurred places a significant administrative burden and does not belong in a specification.

This specification discounts what has been / is happening within the concrete industry to be more cost effective and environmentally conscious. The requirements of this specification limit an engineer to make certain decisions. This is primarily evident in the section which encourages entities to consider certain practices.

- SCM use has been maximized for years to achieve certain performance characteristics and reduce costs. Clearly improved durability = increased service life = reduced GHG's for a given application. Too much use of SCM's in northern environments like NY have shown to cause premature deterioration of exterior concrete.
- Right-sized structural elements have always been designed. Seldom is there an over-design since cost is always being considered. There are many instances where use of standard sizes is more cost effective for forming and reinforcing. If every situation was "right-sized" there would be specialized one-time use forming required, wasting resources.
- Use of PLC has been allowed in the United States for many years and will very soon become the standard type of cement used and most commonly available.
- Alternative contracting methods such as design-build have led to some very economical practices that reduce concrete usage in general and increased SCM usage overall.
- Performance Engineered Mixture requirements implemented in both the commercial construction and transportation industry requires well-graded aggregate blends using the tarantula curve, minimizing cement content, and maximizes SCM use all of which reduce GHG's.

The concrete industry (material suppliers, concrete producers, specifiers, and owners) has been progressing changes that result in reduced GHG emissions. The availability and use of PLC is increasing and may be the only type of cement available within the next year or two. Aggregates have always been used within their local markets to reduce GHG's by minimizing trucking distances. Concrete production uses materials in their most economical proportions to achieve the needed performance. Minimized cement contents, increased SCM usage based on most available products, and well graded aggregates have all been used regularly resulting in reduced GHG's. Several companies now provide CO₂ injection within concrete. In most construction applications old concrete is crushed, screened, and reused as aggregate in geotechnical applications. All government entities have specified performance criteria for improved cost effectiveness that leads to reduced GHG's.

We urge caution as Lower Embodied Carbon concrete specifications are developed since most projects using concrete have design lives of 50 to 100 years. Changing cement and SCM proportions could have a deleterious impact on concrete durability, significantly lessening the life of the material. Current mix designs have a proven track record of meeting the design life which is of paramount importance when designing buildings, bridges, dams and any other project where early failure could be catastrophic.

NYMaterials appreciates this opportunity to comment on the draft concrete specifications and this letter represents the collective view of New York's ready mixed concrete industry as represented by this association. These comments were compiled and prepared by our Concrete Technical Consultant, Donald Streeter, P.E., who brings 35 years of concrete-related experience at the NYS Department of Transportation. The New York Construction Materials Association stands ready to discuss this matter in greater detail should the committee need additional information.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Eileen S. Renaud". The signature is fluid and cursive, with the first name "Eileen" being more prominent.

Eileen S. Renaud
Vice President