

Draft Specification Modifications for Low Carbon Concrete

(Below is suggested additive criteria to current project specifications Section 03 30 00. This is not all-inclusive language, and it should be reviewed with other specification requirements to eliminate redundant or conflicting criteria prior to specification use.)[Addendum No. #]

SECTION 033000 – CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Cast-In-Place Concrete.
- B. Steel Rebar.

1.2 DEFINITIONS

- A. Embodied Carbon of a Building Material or Product: The greenhouse gas emissions associated with the cradle-to-gate life cycle stages, raw material extraction, transportation, and manufacturing and processing, of a building material. On an Environmental Product Declaration (EPD), the Global Warming Potential (GWP) for scopes A1-A3.
- B. Cementitious Materials: Materials that have cementing value if used in grout, mortar, or concrete, including portland cement alone or in combination with one or more of the following: blended hydraulic cements, fly ash, slag cement, ground-glass pozzolan, silica fume, calcined clay, and/or other pozzolans.

1.3 SUBMITTALS

- A. Embodied Carbon Submittals:
 - 1. Embodied Carbon Limit Compliance: An [insert name for your project specific tracking sheet] [use template project specific tracking sheet provided by Building Transparency] shall be submitted for each type of concrete mix design by strength and/or application type and for each type of steel reinforcing installed on the project.
 - a. Proof of Compliance: A Type III Environmental Product Declaration (EPD) shall be provided.
 - b. Bill of Materials: Provide the following information, itemized for each unique concrete mix design and each associated steel reinforcement type:
 - 1) Quantities of each material reported in applicable Declared Units required in Part 2 Performance Requirements.
 - 2) Location where each material was manufactured.
 - 3) Timing: At a minimum, provide at the following milestones:
 - a) As soon as materials sources are known.
 - b) Completion of primary structural frame.

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- c) If design changes occur during construction, provide an updated bill of materials.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Embodied Carbon - Cast-In-Place Concrete: Provide a Type III, Product-Specific Environmental Product Declaration (EPD) for each concrete mix design that documents compliance with the following:
 1. System Boundary: Product Stage, A1-A3.
 2. Declared Units: [yd3] [m3].
 3. Product Category Rule(s): [Insert from EC3 or from applicable policy requirement]
- B. Embodied Carbon - Steel Rebar: Provide a Type III, Product-Specific Environmental Product Declaration (EPD) that documents compliance with the following:
 1. System Boundary: Product Stage A1-A3.
 2. Declared Units: [kg] [metric ton].
 3. Product Category Rule(s): [Insert from EC3 or from applicable policy requirement]

2.2 CONCRETE MATERIALS

- C. Cementitious Materials: Materials conforming to the following are permitted:
 1. Portland Cement: ASTM C150 - Type I, I-II, II, II-V or V
 2. Blended hydraulic cement: ASTM C595 - Type IL, IP, IS, or IT
 3. Performance hydraulic cement: ASTM C1157 - Type GU, HE, MS, HS, MH, LH
(while multiple cement types are allowed in i-iii above, mix documentation shall justify each type's use with back-up testing, and shall be subject to responsible design professional review and approval prior to use)
 4. Coal Ash: ASTM C618 – Class C or F. Document changes in the coal ash used if it varies from a single source for the whole project, including validation through acceptance of a newly submitted mixture design.
 5. Ground Glass Pozzolan: ASTM C1866
 6. Natural Pozzolan, raw or calcined: ASTM C618 - Class N
 7. Silica Fume: ASTM C1240.
 8. Slag Cement: ASTM C989 - Grade 80, 100, or 120.

END OF SECTION