DIVISION 3 CONCRETE

GENERAL

Concrete design shall be in accordance with the latest edition of the DC Building Code and comply with requirements of the American Concrete Institute (ACI); specifically, the requirements of ACI-301, ACI-318 for reinforced concrete structures, ACI 3xx for hot weather construction and ACI-306 for cold-weather construction. Design strength shall be appropriate to the use intended but shall be a minimum 3000 psi (at 28 days).

The Contractor shall provide a design mix from a commercial testing laboratory approved by the Consultant, using samples of aggregates and cement approved for use. Cost of the design mix preparation shall be borne by the Contractor.

Admixtures in concrete used for building design shall be approved by the Owner and shall be in accordance with requirements of the project, relative to hot weather, cold weather, pour schedules, sustainability and other special project requirements.
In support of project LEED requirements and AU sustainability goals, consider the following:

1. Require fly ash, slag cement, silica fume and/or another pre-consumer recycled material for concrete. Require post-consumer recycled material in the aggregate. http://greenlivingideas.com/2008/12/21/can-concrete-be-eco-friendly/
2. Set an overall target as per the LEED formula so: (Product Cost * Preconsumer % *0.5) + (Product Cost * Post-Consumer %) ≥ to 20% of total concrete spend
3. Slag cement dramatically reduces embodied energy and greenhouse gas emissions in concrete. Most slag cement in the U.S. is recovered at iron blast furnaces located within the U.S. or Canada.
4. Silica fume is a byproduct of producing silicon metal or ferrosilicon alloys. One of the most beneficial uses for silica fume is in concrete. Concrete containing silica fume can have very high strength and can be very durable.
5. For all materials included in CSI specification sections 2–10, provide the total hard cost of each material (excluding labor and equipment). Be sure to include manufacturing and extraction locations and manufacturer’s data, and/or product information confirming the product’s sustainable attributes (such as percentage of re- cycled content, certifications).

Curing components used in slabs shall be compatible with applied finishes, including vinyl flooring and carpeting. The Contractor shall measure moisture content in slab construction prior to installation of these finishes; all installation will be performed in accordance with the manufacturer’s requirements.

Testing services for concrete are to be paid for by the Owner and conducted by an independent testing laboratory selected by the Owner. Laboratory-cured test specimens and field-cured specimens shall be used to confirm the quality and strength of the concrete material. A list that includes the type, quantity and frequency of tests shall be kept for all tests.

STRUCTURAL CONCRETE – 03 41 00

Perlite and vermiculite are not permitted for use in structural concrete; fly ash is preferred.

END OF DIVISION 3