03 00 00. CONCRETE

03 00 10. Minimum Standards to comply to: City of Columbus Construction and Material Specifications Item 511 for Concrete for Structures and Item 450 for Rigid Pavements.

03 00 20. STRUCTURAL DESIGN OF SLABS: Consideration shall be given in the design of floor and roof slabs to provide exposed construction which can be used as finished ceilings insofar as practicable. Such construction, however, shall be planned only if requirements for limits in heat losses and for noise control can be met.

03 00 30. DESIGN OF CONCRETE FOOTINGS: Bottoms of footings for exterior foundations should be at least 3'-0" below finish grade.

03 00 40. Concrete mix designs shall be included in the shop drawings submission and submitted a minimum of 30 days prior to first concrete placement.

03 00 50. Unprocessed bank run materials shall not be used in any concrete mix.

03 30 00. CAST-IN-PLACE CONCRETE

.1 ON-SITE SUPERVISION: The Architect/Engineer (A/E) or his approved representative shall observe the placing of all concrete and shall report non-compliance with specifications and drawings to the University Architect/Engineer.

.2 TESTS: A minimum of 4 test cylinders prepared in accordance with ASTM C495 shall be taken during each day's placement. Tests shall be made by a testing laboratory employed and approved by the A/E. The cost of these tests will be reimbursed by the University. Written reports of the tests shall be sent directly to the A/E, with a copy to the University Architect/Engineer. Laboratory shall make tests for wet density, dry density, and compressive strength of each specimen.

.3 MISCELLANEOUS REQUIREMENTS:

.3.1 INTERIOR BUILDING CONCRETE: Specify a mix which will give compressive strength of not less than 3,500 psi in 28 days; except that 1,500 psi concrete may be specified for filling over-excavations for footings.

.3.2 EXTERIOR CONCRETE: An approved air-entraining admixture shall be used for all concrete exposed to weather. Minimum strength shall be 4000 psi. Aggregate for exterior concrete exposed to view shall be washed crushed limestone only.

.3.3 INTEGRAL FINISH shall be specified for all floors. No separate topping.

.3.4 HARDENER TREATMENT: All finished floors that will be left exposed shall receive hardener treatment. Verify that the hardener used is compatible with the finish material curing requirements as listed by the manufacturer.

.3.5 PROTECTION FOR NOSINGS on concrete steps shall be provided by rounded cast nosing with non-slip surface.
.3.6 NON-SLIP SURFACING: Ramps, treads, and platform of stairs shall have non-slip surface when not covered with finish flooring materials.

.3.7 Vapor Barrier is required for Slabs on Grade

.3.8 Post-tensioned concrete is prohibited in occupied structures.

.3.9 The minimum concrete protection for reinforcement as defined by ACI 318 shall be increased by 25% to ensure the minimum cover is maintained.

.3.10 CURING COMPOUND CAPABILITY: Curing compound manufacturer is to provide certification that their product is compatible with the resilient flooring or carpet adhesive scheduled for the space.

.3.11 Concrete is to be placed and consolidated at air temperatures between 40 and 85 degrees Fahrenheit for the first 72 hour period after placement. If these temperatures are unable to be maintained, ACI 305 and ACI 306 must be followed.

.3.12 If the main structural element of a building is to be concrete, the University requires construction to be a Cast-in-Place concrete structure. The use of Precast, Prestressed, Post Tensioned concrete construction methods for structures require written approval from the University Engineer.

03 33 00. ARCHITECTURAL CONCRETE:

.1 SPECIFICATIONS shall meet current standard specification for architectural concrete as published by the American Concrete Institute.

.2 A SAMPLE PANEL 4 feet by 8 feet in size shall be erected at the site when cast-in-place architectural concrete is to be used. Panel shall be protected from construction operations, but shall be left exposed to the elements. Apply curing compound if specified for the final product – see Division 03 37 00. Panel shall be left in place until the University Architect has approved all architectural concrete.

03 34 00 ROOF FILL: Lightweight concrete for roof fill shall be made with expanded shale aggregate. For consideration of other materials, the A/E shall submit his recommendation with complete back-up documentation to the University Architect/Engineer.

03 34 10. INSULATING CONCRETE ROOF DECKS: Concrete shall have the following characteristics:

- Wet Density: 40-60 lbs. per cu. ft.
- Dry Density: 20-30 lbs. per cu. ft.
- Compressive Strength: 125-225 psi

03 37 00 CURING COMPOUNDS: Require a manufacturer’s certification that the compounds used for architectural concrete are non-yellowing and non-staining. Compound must be applied to sample panels.
03 40 00. PRECAST CONCRETE: if approval was granted by the University Engineer to use precast concrete the following design standards are to be followed.

03 41 00 PRECAST STRUCTURAL CONCRETE: Base design and specifications on recommendations of the American Concrete Institute, ASTM tests and the Precast/Prestressed Concrete Institute (PCI).

03 41 10. PRECAST CONCRETE PANELS: Base design and specifications on recommendations of the American Concrete Institute, ASTM tests and the Precast/Prestressed Concrete Institute (PCI).

03 45 00. ARCHITECTURAL PRECAST CONCRETE: Follow the design and specification recommendations of the Precast/Prestressed Concrete Institute (PCI) for architectural precast concrete.

END OF DIVISION 03 CONCRETE