

033000 CAST-IN-PLACE CONCRETE

1. KU standard concrete mix requirements are 3000psi unless specified otherwise.
2. The latest edition of American Concrete Institute (ACI) standards shall be followed.
3. Testing: The Contractor shall be required to retain and pay for the services of a University-approved laboratory to perform all concrete testing and inspections in accordance with applicable ASTM standards.
 - a. Sampling Fresh Concrete: ASTM C172, except modified for slump to comply with ASTM C94.
 - 1) Slump: ASTM C143; one test at point of discharge for each day's pour of each type of concrete; additional tests when concrete consistency seems to have changed.
 - 2) Air Content: ASTM C173, volumetric method for lightweight or normal weight concrete; ASTM C231, pressure method for normal weight concrete; one for each day's pour of each type of air entrained concrete.
 - 3) Concrete Temperature: ASTM C1064; one test hourly when air temperature is 40 deg F (4 deg C) and below, when 80 deg F (27 deg C) and above, and one test for each set of compressive strength specimens.
 - 4) Compression Test Specimen: ASTM C31; one set of four standard cylinders for each compressive-strength test, unless otherwise directed. Mold and store cylinders for laboratory-cured test specimens except when field-cured test specimens are required.
 - 5) Compressive-Strength Tests: ASTM C39; one set for each day's pour exceeding 5 cu. yd. plus additional sets for each 50 cu. yd. more than the first 25 cu. yd. of each concrete class placed in any one day; one specimen tested at 7 days, two specimens tested at 28 days, and one specimen retained in reserve for later testing if required.
 - b. When frequency of testing will provide fewer than five strength tests for a given class of concrete, conduct testing from at least five randomly selected batches or from each batch if fewer than five are used.
 - c. When total quantity of a given class of concrete is less than 50 cu. yd., Architect may waive strength testing if adequate evidence of satisfactory strength is provided.
 - d. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, evaluate current operations and provide corrective procedures for protecting and curing the in-place concrete.

- e. Strength level of concrete will be considered satisfactory if averages of sets of three consecutive strength test results equal or exceed specified compressive strength and no individual strength test result falls below specified compressive strength by more than 500 psi.
 - f. Test results shall be reported in writing directly from testing laboratory to Architect, Structural Engineer, ready-mix producer, and Contractor within 24 hours after tests. Reports of compressive strength tests shall contain the Project identification name and number, date of concrete placement, name of concrete testing service, concrete type and class, location of concrete batch in structure, design compressive strength at 28 days, concrete mix proportions and materials, compressive breaking strength, and type of break for both 7-day tests and 28-day tests.
 - g. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted but shall not be used as the sole basis for acceptance or rejection.
 - h. Additional Tests: The testing agency will make additional tests of in place concrete when test results indicate specified concrete strengths and other characteristics have not been attained in the structure, as directed by Architect. Testing agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C42, or by other methods as directed.
 - i. Testing In-Place Concrete Floors for Flatness: For floors, use ASTM E1155, "Test Method for Determining F_F Floor Flatness and F_L Floor Levelness Numbers."
- 4. Air-entrained concrete shall be used where concrete is exposed to the weather. Admixtures are permitted at the discretion and approval of the design professional.
 - 5. All concrete floors which will be exposed within the finished building shall be sealed.
 - 6. Concrete additives, where required, shall contain not more than 0.1% chloride ions and shall be certified as such by the Contractor.