

1 General

.1 Codes & Standards

- .a Architectural and/or structural concrete specifications shall be prepared by the architect and/or structural engineer.
- .b ACI 318-14, “Building Code Requirements for Reinforced Concrete”, and ACI 347-14, “Recommended Practice for Concrete Formwork”.
- .c Concrete Reinforcing Steel Institute (CRSI) “Manual of Standard Practice”.

.2 Testing & Standards

- .a Concrete strength (Psi) for footings shall be specified by designer based on geotechnical recommendation.
- .b Concrete testing will be by the Owner, coordination by the General Contractor.
- .c Retesting of rejected materials for installed work shall be done at Contractor’s expense.
- .d Designer shall confirm what special inspections are required for each project.

2 Products

.1 Forms

- .a Exposed Concrete: Plywood, metal or other acceptable panel-type material to provide continuous, straight, smooth exposed surfaces.
- .b Exposed Concrete Finish: Designer preference, subject to Owner approval.

.2 Reinforcing

- .a Bars: ASTM A615, Grade 60, deformed.
- .b Steel Wire: ASTM A 82, plain, cold-drawn steel
- .c Welded Wire Fabric: ASTM A 185, welded steel wire fabric
- .d Fiber-Mesh: ASTM C 1116, may be utilized, pending owner’s approval.

.3 Concrete

- .a Portland Cement: ASTM C 150, Type I
- .b Owner Preference is that fly ash not be allowed in mix designs.
- .c Water: Potable.
- .d Air Entraining Admixture: ASTM C 260. Use in exterior exposed concrete.
- .e Water-Reducing Admixture: ASTM C 494, Type A.
- .f High-range Water-Reducing Admixture (Super Plasticizer): ASTM C 494, Type F or Type G.
- .g Water-Reducing, Accelerating Admixture: ASTM C 494, Type E.
- .h Water-Reducing, Retarding Admixture: ASTM C 494, Type D.
- .i Use Chemical Hardener or Surface Sealer on all interior concrete slabs to remain exposed.

.4 Aggregates

- .a Fine Aggregates: ASTM C 33; natural or manufactured sand passing a 3/8-inch (9.5-mm) sieve.
- .b Coarse Aggregates: ASTM C 33; gravel, crushed gravel, crushed stone, air-cooled blast furnace slag or crushed hydraulic-cement concrete of varying gradations.

.5 Related Materials

- .a Vapor Retarder: Polyethylene sheet, shall meet the requirements of ASTM E 1745, Class B, five-ply, nylon or polyester cord reinforced high density polyethylene sheet, 10 mils thick.
- .b Evaporation Control: Monomolecular film-forming compound for temporary protection from rapid moisture loss.
- .c Flexible Waterstops: Rubber, PVC or chemically resistant thermoplastic.
- .d Rigid Waterstops: Sheet metal; copper, stainless steel or galvanized steel.
- .e Other related materials as recommended by engineer and approved by owner.

.6 Mix Designs (based on structural engineer recommendations)

- .a 3,000 psi, 28-day compressive strength: Water/Cement Ratio 0.58 maximum (non-air-entrained), 0.46 maximum (air-entrained).
- .b 4,000 psi, 28-day compressive strength: Water/Cement Ratio 0.44 maximum (non-air-entrained), 0.35 maximum (air-entrained).
- .c Other mix designs are recommended by engineer.
- .d Slump Limits are to be based on structural engineer recommendations.

.7 Curing Methods

- .a Designer Note: Coordinate concrete curing method with type of concrete finish.
- .b Keeping concrete continuously wet by ponding water, fogging waterspray or sprinkling with water.
- .c Covering concrete with mats or fabric kept continuously wet.
- .d Covering concrete with impervious sheet membrane.
- .e Applying a membrane-forming, liquid curing compound.

.8 Finishes

- .a Stained Concrete: Color surface staining of concrete surfaces, as approved by Owner.
- .b Polished Concrete: Mechanical grinding and polishing of existing or new concrete surfaces, as approved by Owner.
- .c Formed Finish: Rough formed, smooth formed or smooth-rubbed finish.
- .d At exposed concrete floors use clear epoxy seal. Allow concrete to cure for 30 days prior to application of seal. Follow manufacturer's recommendation for surface preparation. Apply two (2) coats of clear solvent base epoxy seal. In the event that North Carolina changes its ambient air quality standard preventing the use of a solvent base, a water base epoxy seal should be used.
- .e Integral Color: Limited Use: As approved by owner.

.9 Precast Concrete

- .a Use: Exterior, non-load-bearing, wall cladding or wall caps.
- .b Insulated Precast Wall Panels: Tilt-up units produced with rigid insulation integrated into the concrete.

- .c Tilt-up Concrete Panels: Limited Use: As approved by owner.
- .d Precast Stairs: As approved by owner.

3 Execution

.1 Control Joints and Isolation Joints

- .a Construct using pre-molded key joints, inserts, tooled joints or sawcut joints.
- .b Minimum depth of control joints **shall** be one-fourth (1/4) of the slab thickness.
- .c Maximum spacing of joints **shall** be 40 ft. by 40 ft.
- .d Isolate all slabs from exterior walls.
- .e Control joints are to be clearly indicated on contract drawings.

.2 Reinforcement

- .a Position support and secure reinforcement against displacement.
- .b When utilizing fiber-mesh reinforcing, confirm correct ratios are followed per manufacturer's data and structural engineer's requirements.

.3 Placement

- .a Comply with ACI 318.
- .b Protect concrete from solvents and oils through duration of construction.

.4 Surface Tolerance

- .a Not to exceed 1/8 in. under a 10 ft. straightedge. To be confirmed by design team.

.5 Concrete Wash-Out Areas

- .a Wash-Out Pit: Design team to designate on contract drawings, coordinate with owner.
- .b Contractor **shall** be responsible to control rinse water run-off.