Residential Concrete Specification

SUGGESTED SPECIFICATION & CONTRACT FOR RESIDENTIAL CONCRETE FLATWORK

SPECIFICATION

- I.General

  Concrete shall be ordered, placed, finished, jointed and cured in accordance with this specification.

- II.Concrete Mix Design
  - For normal duty all exposed concrete shall be a minimum 4000 psi, air-entrained at 5 to 7%, produced in accordance with ASTM C-94.
  - For better durability, a high-performance concrete mix is recommended, as follows:
    - Water/Cement or Water/Cement + Pozzalon ratio = .42 or less
    - Air entraining 5 to 7%
    - 1-1/2 # of Fibers per cu/yd
    - Mid Range Superplasticizer for workability
    - Slump -- 5 to 7 inches, while maintaining .42 w/c ratio
  - Water addition at job site limited to one (1) addition only, with amount of water added limited to 1-1/2 gal per cu/yd, maximum

- III.Preparation of Subgrade
  - Subgrade under all concrete shall be brought to all required lines and grade and compacted to a uniform and stable condition. If local soils are of poor value and not compactible, a stone base of 3 to 4 inches should be placed and compacted.
  - Subgrade should be moistened just before placing concrete if needed. Placing concrete on a dry subgrade can cause concrete slab to curl, warp or crack.
  - Subgrade shall be properly drained to prevent accumulation of water in the subgrade.
  - When placing concrete on a vapor barrier (not recommended for exterior concrete) cover plastic with thin layer of sand or

pea gravel to allow some water to leave slab through the bottom.

- Concrete should never be placed on a frozen sub grade.

- IV.Forming

  The area to be concreted should be formed in accordance with the plans using forming material that is straight and true in both the vertical and horizontal planes. Forms should be securely staked to prevent movement during concrete placement and finishing operations, and should be set to properly control the elevation and drainage of the concrete slab. All form dimensions and elevations should be checked for accuracy prior to concrete placement.

- V.Concrete Placing & Finishing
  - 1)Strike off and consolidation should be done with a vibratory screed or other vibratory strike-off tool. Vibration is the best way to consolidate a 4 inch to 6 inch thick slab. When using a vibratory screed, slump should be a maximum of 4 inches.
  - 2)After strike off and consolidation the slab should be bullfloated at a right angle to the direction of the screed. Care should be taken to keep the bullfloat flat on the surface. Tilting the bullfloat can seal the surface and cause scaling in the finished slab.
  - 3) **WAIT** until all bleed water has left the surface. The higher the slump, the longer the waiting time. Special high durability mix designs do not bleed as much and can be finished sooner. Always lower slump of concrete in cold weather.
  - 4)Special Note: On days of high wind, low humidity, and high temperature, evaporation will take water from surface of slab faster than it can be replaced by bleed water. This condition causes surface to dry, shrink and crack while the concrete is still plastic (These are plastic shrinkage cracks). Fibers will help with this problem, as will the proper use of an Evaporation Retardant such as Con-Film, Eucobar or Aquafilm. Contractor should spray Evaporation Retardant on slab just after bull floating to help hold water in slab until time to begin finishing. This material is very inexpensive but must be on hand when conditions arise. On days where temperature conditions are extreme, the best option is to delay the concrete placement until ambient weather conditions improve.
  - 5)Never use a trowel or fresno on exterior concrete. These tools present a high risk of prematurely sealing the surface and trapping bleed water in the slab. This will lead to surface problems such as crazing, dusting, scaling and lamination.

- VI.Joints
  - Cracks in concrete are best controlled by the proper use of control & isolation joints. The Contractor shall furnish a jointing plan for slabs, basement, garage floor, driveway, patio and walks.
  - Control joints may be tooled in fresh concrete, sawed in hardened concrete, or installed prior to concrete placement in the case of stay-in-place metal joints or wooden strips
  - Control joints must be 1⁄4 the depth of slab to be effective.
  - Joints should be placed at 2 to 2 1⁄2 times the slab thickness, expressed in feet. Example: 4 inch slab thickness x 2 = 8 foot joint spacing)
  - Control joints should always be cut off center of radius areas such as the driveway apron.
  - An early entry saw is an excellent tool to be sure joints are cut into hardened concrete at the proper time. Sawed joints should be installed as soon as concrete will resist raveling during cutting. Sawed joints should normally be installed on the same day as placement.
  - Isolation joints will use an isolation material to separate a slab from another structure, slab, wall or other object that is fixed in place. Examples include the junction between a basement slab and wall, columns, or floor drains. Other areas include the junction between driveway and garage floor or sidewalks.
  - Isolation joints must be placed to the full depth of the concrete pour.

- VII. Edging

  Required to put smooth radius on the edges of slabs to help resist chipping. Do not edge a slab that will be tiled or carpeted.

- VIII.Floating & Broom Finish

  Slabs exposed to freeze-thaw conditions, salt, and other exterior weather conditions should not be overworked during finishing. Exterior concrete surfaces require a minimum of manipulation – a simple float and broom finish works very well.

- VII.Curing
  - From March to November, cure concrete with a quality spray-applied curing compound, or a cure-and-seal compound applied per manufacturer's recommendations, to be applied as soon as possible after final finishing operation is completed.
  - From November to March, cure with insulating blankets. Blankets should be placed on concrete as soon as possible without marring the surface and left on for three days, minimum. Upon removal concrete is allowed to air dry, with sealing to follow no sooner than one month, and only when

ambient conditions allow sealer to be properly applied.

- VIII.Sealing

  If the concrete was not cured with a cure-and- seal product, a penetrating sealer should be applied after concrete has been allowed to air dry. This sealer can be applied by the Contractor or the Homeowner.

- IX.Homeowner or General Contractor Expectations

  This area should be used for the project owner and the installing contractor to identify and agree on any other objectives the owner has for the completion of the project. This section should also include a payment schedule, timing, and warranty information.

  This might include references to other projects completed by the Installer that will be used as a benchmark for evaluating the quality of this installation, or to list specific conditions that will be grounds for removal, repair, or reduction in payment amount.

  DATE:_____

  PROJECT NAME:_____

  OWNER:_____

  Signature:_____

  CONTRACTOR:_____

  Signature:_____

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