

DIVISION 3 - CONCRETE (Subject to Division 1)

3.A. MATERIALS AND METHODS

1. Concrete shall not be placed when stormy or inclement weather prevents good workmanship. Unless authorized in writing by the Rehab Specialist, mixing and concreting operations shall be discontinued when a descending air temperature in the shade and away from artificial heat reaches 40° F and shall not begin until an ascending air temperature in the shade and away from artificial heat reaches 35° F. In no case shall concrete be placed upon a frozen subgrade. Concrete shall not be placed when the ambient air temperature exceeds 100° F. No concrete placement may start if the ambient air temperature is 90° F or above. Use of antifreeze agents or calcium chloride in concrete is allowed (not to exceed 2%) as per manufacturer's instruction.
2. Curing and protection shall be accomplished by preventing loss of moisture, rapid temperature change, and mechanical injury or injury from rain or flowing water for a period of seven (7) days. Curing shall be started soon after placing and finishing, and when free water has disappeared from the surface of the concrete. Expansion joints (e.j.) shall be placed at all locations where new paving abuts curbs or other structures, and in spans greater than 40 feet in length. All exterior concrete flat surfaces shall be cured within 12 hours with Kure & Seal or an approved equal.

3.B. FOOTINGS AND PIERS

1. Footings shall be set on undisturbed soil or compacted backfill, which is free of organic material. Poor bearing soil shall be removed to extent required for footing loads and replaced with a minimum of eight (8) inches of compacted backfill material. Side forms shall be used where soil will not retain shape.
2. Unless otherwise shown, footings shall be sized as per code requirements, centered directly under the wall and reinforced with two (2) #4 bars, three (3) inches up from bottom of excavation and three (3) inches away from side excavation. Bars shall be lapped 18 inches at splices and shall run continuously around corners.
3. Frost footings shall be a minimum of 42" deep and shall conform to the requirements of the Uniform Building Code as adopted by the City of Iowa City.
4. Concrete support piers shall be installed where called for in deficiency list. Piers are to be a minimum of 12" x 12" x 42" deep of poured concrete on a 20" x 20" x 8" concrete footing with a maximum of 4" of pier exposed above grade.

3.C. WALKS

1. City sidewalks to be as required by City Engineering Department.
2. Unless otherwise specified, all exterior concrete walks and slabs on grade shall be a minimum of 4 inches thick. Sidewalks should be of the width as set forth in the Bid Document with contraction joints as shown or spaced not more than 1½ times the sidewalk width. Expansion joints shall not be greater than 40 feet apart.
3. Walks shall be sloped away from buildings a minimum of ¼ inch per foot and a maximum of 2¼ inches per foot. Float trowel to true surface and broom finish. Install ½" by depth required asphaltic strip or ½" redwood expansion joints at each end of walks which abut walks, curbs, steps, walls, etc.

4. During hot weather, concrete shall be cured by methods approved by the City Engineering Department for City sidewalks.
5. During wet weather, walks shall be covered with plastic sheet or waterproof paper or sheet burlap.
6. Until it is set, concrete shall be protected with barricades, fences or other means. Forms shall be removed after 24 hours and grade restored, allowing for grass turf to finish flush with top of walk.
7. Reinforcing shall be ½" rebar, if necessary, as determined by the Rehabilitation Specialist over newly filled areas.
8. Walk shall be protected from freezing for at least two (2) days after placement. Concrete shall not be placed if temperature is below 40° Fahrenheit, unless special measures are taken. See the Uniform Building Code.

3.D. INTERIOR SLABS

1. When required by the Bid Document or Code, four (4) inches of lime waste or road stone, as needed, shall be placed on undisturbed or compacted fill. Rake sand level to a uniform thickness. Fill as needed base course of clean graded gravel, no larger than two (2) inches and not smaller than ¼ inch. Excavation shall not be below exterior wall base or footing.
2. A continuous 6 mil membrane shall be installed on top of gravel. Precaution shall be taken so as not to tear the membrane during concrete placement.
3. Concrete slab to be constructed with 4000 lb. concrete with a 4-inch minimum thickness.

3.E. EXTERIOR SLABS

1. When required by the Bid Document or Code, area shall be filled with four (4) inches of sand or a mixture of sand and gravel uniformly compacted.
2. A four (4) inch slab with ½" rebar 2' o.c. shall be placed over fill. If applicable, see Drawings for slab detail. Control joints and expansion joints shall be used to divide slabs into approximate "squares" not exceeding 12 feet by 12 feet.

3.F. SLAB TOPPING

1. Existing slab shall be cleaned of all surface dirt and grease, and scrubbed thoroughly to provide a dust-free base for topping. Use a quality product manufactured specifically for this type of cleaning.
2. A minimum of two (2) inch concrete topping material with 6x6 10/10 welded wire shall be placed over slab. Trowel, slope and otherwise finish similar to regular slab work.

3.G. SPLASH BLOCK

1. Size shall be 12" x 18" minimum and may be either job site formed or precast. When job formed, make at least four (4) inches thick with concrete depression sloped away from building. Reinforce with wire mesh.
2. Existing splash blocks which have settled shall be reset to drain away from the building.

3.H. STEPS

1. **Concrete Steps** shall be formed to accurate profile with riser height not to exceed 7 inches and tread to be a minimum of 11 inches. Round all nosings and provide fillet on internal corners. Broom across direction of traffic. If applicable, see drawings or Bid Document for details of reinforcing.
2. **Precast Concrete Stairs** shall be of a minimum 4,000 P.S.I. strength and shall be supplied by a reputable precast concrete supplier. Precast concrete areaway shall be leveled, plumbed and braced solidly before commencing backfilling. Backfilling shall be done in 8" layers and compacted before next lift is replaced.
3. 4000 lb. air entrained concrete shall be used.
4. Protection shall be provided as required for sidewalks.

3.I. COLUMN FOOTINGS

1. Column footings shall be 12" x 12". Where concrete floor exists, cut openings as large or larger than column plate, then at a 45° angle. Dig footing to required base width. Fill opening with 3,000 lb. concrete. Anchor column to footing with a minimum of two (2) bolts. Add steel reinforcing bars as required.

3.J. PORCH PIER FOOTINGS

1. Post hole shall be 10" in diameter x 42 inches deep. At the bearing level, flare out top at a 45° angle to the width and length of masonry pier being replaced.

3.K. DRIVEWAY APPROACH

1. Driveway approach shall be concrete with a three (3) foot radius as a minimum. Vertical transition shall prevent contact of car undercarriage or bumper with surface. Slab shall be a nominal six (6) inches or more in thickness with ½" rebar 2' o.c. All work shall conform to the City of Iowa City Engineering Department Standards.

3.L. DRIVEWAY

1. Furnish and install concrete driveway. Subgrade shall be well-drained, uniformly graded and compacted to prevent harmful differential settlement.
2. Concrete shall be four (4) inches thick minimum, with 42 lb. ½" rebar 2' o.c. Provide an expansion joint at public walk and/or curb, and at garage or carport slab. Use 3/4-inch thick pre-formed non-extruding expansion joints.
3. Finish to provide a smooth surface true to cross section and grade. Concrete to be cured with Kure & Seal or with approved equal.
3. Where the width of the driveway exceeds twenty feet, center the contraction joint. Contraction joints cut completely through slab and finished with 3/8-inch dividing tool. If closer than three feet to adjoining property, install curb or slope to drain away from neighbors.
5. Crown or cross slope:
 - A. Minimum, ¼-inch per foot (1%).

- B. Maximum, 5/8-inch per foot (5%).
6. All work and materials to conform to code.

3.M. CONCRETE REINFORCEMENT

1. Reinforced concrete work shall comply with building code requirements for reinforced concrete (ACI-318) of American Concrete Institute. Reinforcing material shall be new material conforming to the following:
 - A. Deformed Steel Bars - ASTM A-305.
 - B. Billet Steel Bars - ASTM A-15.
 - C. Welded Wire Fabric - ASTM A-185.

3.N. CONCRETE PORCH

1. Furnish and install concrete porch and step(s). Size to be as set forth in Bid Document.
2. Slab to be a minimum four (4) inch, 4000 lb. concrete having a minimum four (4) inch slump, placed on properly compacted earth and fill. Slab to be laid true and level and ¼" fall away from house. Install ½" rebar 2' o.c.

3.O. REPAIR CONCRETE STEPS

1. Cut out or otherwise remove all deteriorated concrete.
2. Thoroughly clean area, removing all loose particles. Dampen surface and apply heavy brush or slush coat of Thorite as manufactured by Standard Dry Wall Products, Inc., or equally prepared concrete patch mix, making certain all pores and voids are filled.
3. Screed off and steel trowel patch so that it is level with surface.

3.P. PATCH CONCRETE DRIVE

1. Chip out all loose materials and disintegrated concrete on all deteriorated areas of drive. Clean off all oils, grease, dirt, salt deposits, etc.
2. Use prepared commercial cleaner, as set forth above.
3. Flush clean, then patch area with prepared concrete patch compound, following manufacturer's printed instructions. Do not apply at temperatures below 40° Fahrenheit, or if temperatures are expected to fall below 40° Fahrenheit within 48 hours.

3.Q. POURED CONCRETE FOUNDATION

1. Tear out and replace complete foundation.
2. Minimum footing shall be 8" x 16" with two 1/2" re-bars. Waterproof to meet all applicable codes.
3. Install windows with wells to match location of previously existing windows unless otherwise set forth in the Bid Document. Provide for proper drainage from window wells.
4. Remove all rubble, debris, etc., from the premises.

5. Replace any and all broken or damaged plumbing caused by the replacement of the foundation. Disconnect all sewer, water and gas lines as required. Provide for reinstallation of above services as necessary so that general contractor can hook up services where they enter the structure. If necessary, cap off any existing plumbing lines for facilities, unless new plumbing is required to be stubbed in.
6. Check to make sure that opening is left in walls to allow for replacement (if necessary) of service lines.
7. Backfill and tamp. Reset house. If required, reset porches to meet proper slope. Porches are to be adequately supported. Reset any and all steps to be properly functional.
8. Tamp and slope ground adjacent to foundation to proper grade.
9. Replace and/or patch all broken and/or damaged walks, service walks, patios, driveways, steps, etc., unless otherwise specified in general contract.
10. Regrade and seed as required under 2.G.
11. Repair and/or replace all broken and/or damaged materials on structure and/or outbuildings.
12. Remove and replace evergreens, shrubs, trees, etc., as set forth in Sections 2.H and 2.R. Check with homeowner for instructions on which items they want saved. Contractor shall exercise all caution and care in the removal and replacement of these items, but it is not required that the Contractor guarantee the replaced items to live after their replacement. The Contractor shall advise same to the homeowner.

3.R. FOUNDATION VENTING

Under floor areas, such as crawl spaces, shall be vented with openings in the foundation wall. These openings shall have a net area of not less than one (1) square foot for every 150 square feet of enclosed area. The openings shall be covered with a corrosion resistant wire mesh with mesh openings not over 1/4". Operable louvers may be used with the approval of the Building Inspector. The openings shall be located as close as possible to the corners of the foundation to allow for cross ventilation.

3.S. HOUSE MOVING

1. Prior to any structure being raised off its foundation, it shall be vacated and shall remain so for the duration of being raised. A permit needs to be obtained from the Iowa City Building Department.