

Best Practice Checklist for Residential Exterior Concrete Flatwork



Yes	No
-----	----

--	--

--	--

Concrete Mix

- 1. Coarse Aggregate:**
 - a. Was the coarse aggregate compliant with Iowa DOT specifications for pavement or ASTM C33 Class Designation 4S?
 - b. Was the contractor and/or owner aware if the aggregate is known to produce popouts?
- 2. Fine Aggregate:**
 - a. Was the fine aggregate compliant with Iowa DOT specifications for pavement or ASTM C33?
 - b. Was the contractor and/or owner aware if sand is reactive and known to produce popouts?
- 3. Air Entrainment:**
 - a. Was the air content of the concrete between 6% and 8% at the time of placement (using the aggregate correction factor)?
- 4. Quality and Strength:**
 - a. Was the mix ordered the proper exterior concrete mix?
 - b. Did the mix have adequate curing time and temperature to achieve the design strength?
- 5. Slump:**
 - a. Was a 4-inch maximum slump used (unless using mid-range or high-range water reducing admixtures)?

Delivery

- 1. Time:**
 - a. Was the time between batching, delivery and final truck discharge 1 hour or less?
 - b. If the time between batching, delivery and final truck discharge was greater than an hour but less than 1.5 hours, was the air content tested and/or adjusted to 6 to 8% and concrete temperature less than 90° F?
- 2. Jobsite addition of water:**
 - a. Was the mix altered on the jobsite?
 - b. If water was added, was it limited to one time and mixed for 30 revolutions at mixing speed?
 - c. If water was added, was the water /cement ratio below the design water/cement ratio?

--	--

Construction

- 1. Subgrade:**
 - a. Was the subgrade uniform and well drained (*soil type, moisture content, compaction*) ?
 - b. Was the subgrade temperature above freezing?
- 2. Slab Thickness:**
 - a. Was a 4 inch minimum thickness used with ideal subgrade conditions where traffic would be pedestrians or automobiles only?
 - b. Was the slab thickness appropriate for its intended use?
- 3. Surface Slope:**
 - a. Was the slope of the flatwork 1/8 in./ft. minimum? (*1/4 in./ft. is preferred to prevent standing water, "birdbaths"*)

Best Practice Checklist for Residential Exterior Concrete Flatwork



Yes	No
-----	----

Construction (Continued)

4. Placement:

- a. Was the concrete consolidated by some means other than a handheld vibratory screed, which can contribute to decreased entrained air content?

5. Finishing:

- a. Did the finisher strike off – bull float – edge and joint – wait – refloat – broom to texture the surface only? (*troweling is discouraged*)
 b. Was the concrete finished after the free water had escaped?
 c. Was the sprinkling of water on the concrete surface during the finishing operations avoided?

Jointing

1. Control Joints:

- a. Were the joints tooled or sawn at 8 and 10 ft. maximum spacings for 4 and 5 inch thick concrete, respectively?
 b. Were the joints tooled or sawn to a depth of at least 1/4 the slab thickness?
 c. Was jointing completed within the first 12 hours after concrete placement?

2. Expansion:

- a. Was expansion or isolation material installed at every location where a driveway abuts any other slab or structure?

Curing

Must be performed and should begin within one hour after finishing!

1. May 1 to October 1:

- a. Was a membrane curing compound applied per manufacturer's recommendations unless fine aggregate contains shale? **or:**
 b. Was the concrete covered with plastic sheet curing blankets or wet burlap for three to seven days?
 c. If a plastic covering was used, were the contractor and/or owner aware that surface discoloration may result?
 d. Were the minimum opening guidelines of 1 day for foot traffic, 3 days for cars, and 7 days for trucks followed? **or:**
 e. Was maturity used to monitor opening time?

2. After October 1 and prior to May 1:

- a. Were cold weather concreting practices followed?
 b. Were insulating blankets used to keep concrete temperature above 55° F for a curing period of at least 7 days?

--	--

Sealing

For additional protection, especially from deicing chemicals

- a. Was a breathable concrete sealer applied per manufacturer's recommendations to the clean and dry concrete surface after 30 days of drying?

Deicers and Fertilizers

- a. Was the owner aware of the importance of avoiding deicer use the first year?
 b. Was the owner aware that deicing chemicals tracked in on new driveways can cause concrete deterioration (especially in flat areas where cars are parked)?
 c. If traction was needed during the first year, was sand used?
 d. After the first year, were deicing chemicals safe for concrete, applied sparingly, and removed quickly along with the snow and ice?
The sole chemical should be sodium chloride. Calcium chloride, magnesium chloride, ammonium nitrate, ammonium sulfate can cause accelerated deterioration of concrete.
 e. If fertilizer was inadvertently applied to exterior concrete flatwork, was it removed immediately?

--	--

The Best Practice Checklist for residential concrete is provided by the Iowa Ready Mixed Concrete Association to minimize concrete surface problems and assure long term concrete performance.