

## Curing Decorative Concrete with Hydronic Heaters

**Q.** *One of our customers has asked us to use a portable hydronic heating system to cure a pavement slab with a stamped and exposed aggregate finish. The system hoses would be placed on the concrete in a back-and-forth pattern, with a hose spacing of about 12 in. (300 mm) on-center. We plan on placing the hoses directly on the slab, followed by curing blankets, as soon as practical after we have finished stamping.*

*We have used portable hydronic heaters to cure plain gray concrete. They have worked well, but we are unsure if we should use one for curing decorative concrete. Will the hoses “shadow” onto the decorative concrete because of differential curing?*

**A.** Contractors who have used a hydronic heater for curing concrete provided the following comments:

- **Contractor A:** We’re in the Dakotas, and we often use this procedure—lay 4 mil (0.1 mm) polyethylene sheeting on the slab before you lay out the hose. This will keep the differential curing to a minimum and minimize hot spots from the hoses. Put your insulating blankets on the top.
- **Contractor B:** I have tried this once, and the hose left lines on the surface. The hydration rate at the surface was greater everywhere the hose touched, and that caused shadows from the hose.
- **Contractor C:** Yes, the hose will leave significant shadows—even with conventional concrete. We have experienced shadowing with tilt-up panels.
- **Contractor D:** Our heater came with instructions—put an insulating blanket over the fresh concrete, lay the hose over the blanket layer, and cover the hose with another blanket layer. This works for plain gray concrete, so I would think it would work on stamped concrete.

Questions in this column were asked by users of ACI documents and have been answered by ACI staff or by a member or members of ACI technical committees. The answers do not represent the official position of an ACI committee. Comments should be sent to [rex.donahey@concrete.org](mailto:rex.donahey@concrete.org).

- **Contractor E:** We have used a heater for curing tilt-up panels (not stamped) many times. We get the best results when we lay a felt-backed curing blanket on the concrete, walk out the hose, lay two layers of insulating blankets, and top everything with reinforced plastic sheeting. We still get some shadowing under the hoses, but we see less discoloration than we get with plastic sheeting applied directly to the slab. I recommend that you set the heater supply temperature to less than 90°F (32°C) to minimize the risk of differential curing. Then cross your fingers and toes and hope for the best—there are no guarantees that there won’t be some discoloration.

In summary, contractor experiences vary. Some have successfully used hydronic heaters; some have had bad results. We also note that one manufacturer recommends the fluid be heated to about 180°F (82°C) when thawing frozen ground but heated to only 120°F (49°C) when curing concrete. This manufacturer also recommends placing a vapor barrier over the concrete, then the hose, and then an insulating blanket.

We don’t have enough details to identify which variables are most important. While moderating the temperature setting on the heater, avoiding direct contact between the hose and the concrete, and minimizing heat and moisture loss will help to provide more uniform curing, some risk of local discoloration will remain.

Because the appearance of decorative concrete is important, the best approach would be to use mockups to identify the variables for successful concrete curing of stamped concrete.

### Acknowledgments

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