

Hot Weather Concreting

Hot weather conditions can present challenges when pouring any ICF. “Hot Weather” may include any or all of the following:

- High ambient temperatures
- Low relative humidity
- Wind velocity
- Solar radiation



Note the following suggestions when building in sustained hot weather conditions:

Form Deflection

Expanded Polystyrene is a thermoplastic and will become more flexible as temperatures increase. It is advisable to pour in the coolest conditions available (early in the morning) and/or to spray forms down with a water mist that will evaporate and carry away some heat from the forms. Concrete pressure may cause undesired deflection in forms that are too warm.

Hot Reinforcing Bar

If reinforcing bar is allowed to heat up inside the forms, the stored heat will tend to accelerate the curing of concrete residue that may build up on the bar during the pour. In successive lifts, this residue may become an obstruction in the wall, and increase the risk of voids. Again, an early-morning pour is suggested to minimize the temperature of both forms and rebar. Vibration of the bar between lifts is also recommended.

This is another reason to employ the “side-pour” method recommended for tall walls. Many builders cut holes in the side of the forms to accommodate filling by the pump through the holes, thus by-passing the upper layers of reinforcing bar. Foam cut-outs are then attached to plywood and placed back into the wall, screwing the plywood onto the tie flanges.

“Hot” Concrete

Concrete that is already beginning to set at the time of delivery is referred to as a “hot load”. Since the concrete curing process is chemical reaction activated (and accelerated) by heat, it is best not to allow the mix to gain temperature during transport. This is problematic at more remote sites that are a long distance from the concrete plant, or routes that may encounter heavy urban traffic. There may be an hour or more of transport time, during which the concrete will begin its curing process. Add another 30 minutes or more for off-loading, and the concrete may be already setting during the pour, which will cause many problems. It may be advisable to keep additional packets of plasticizer or set-retarder on site for emergencies, especially in the hottest conditions. Some concrete producers are able to add chilled water or ice to the mix to lower initial mix temperatures.

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A solution to this problem is “site-mixed concrete”, wherein all the dry components are delivered in separate bins on a specialized mix truck and combined with water on site. The mixed concrete is literally seconds old when it is placed in the pump truck, and the concrete has a much longer life in its plastic (liquid) state, before curing begins. Call your local concrete producers to find this type of equipment, usually companies that specialize in small “yard-at-a-time” deliveries.

See ACI 305 “Hot Weather Concreting” for more detailed information on hot weather concreting.

General Hot Weather Concreting Guidelines

- Pour early in the morning to take advantage of cooler ambient temperatures.
- Spray a water mist over forms to help dissipate stored heat.
- Avoid build-up of concrete on hot rebar by vibrating rebar between lifts, or bypassing upper rebar by pouring from side of wall.
- “Site-mix” concrete that must be transported long distances (or in heavy traffic).
- Keep plasticizer or set-retarder on site for emergencies.
- Order chilled water or ice added to the mix at the batch plant, if available.
- Use placement techniques and slump that will allow the fastest practical placement of concrete.

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