

Press release from Jan de Beer, cell 082 456 3677:

Special Training For Concrete Work In Winter

Icy weather's effects on concrete is covered in detail in The Concrete Institute's SCT30 "*Concrete Technology*" training – an intensive five-day course that deals with, among many other subjects, the special techniques required for cold weather concreting.

John Roxburgh, senior lecturer at TCI's School of Concrete Technology, says special techniques required for winter concreting include optimising the mix design, methods of heating up the concrete, thermal curing and the use of concrete maturity measurements.

"Dealing with extreme temperature is fundamental to good concrete practice on site. Cold weather concreting is often defined as the placing of concrete at temperatures below 5°C and in the South African there are many areas that will have ambient temperatures around or below 5°C - especially early in the mornings, late afternoons and evenings."

Roxburgh says in cold weather several potential problems may occur:

- The binder will hydrate at a slower rate leading to concrete taking longer to set and gain strength which has the knock-on effect of longer bleed times and difficulties in finishing, as well as later stripping times;
- There is also a chance of the concrete freezing with the associated damaged caused by the expansion of ice within the concrete.
- Thermal cracking in mass pours may also be harder to prevent with high temperature differentials between the hotter core concrete and the outer concrete in contact with the low external ambient temperatures.

"However, there are some basic and simple steps to take for concrete work in cold weather. The first is to always try and cast the concrete on a rising thermometer: rather cast in the early morning with the ambient temperature increasing as this would give the concrete more time to gain strength before it potentially freezes. Try and use slightly 'richer' mixes by either adding more cement to the mix or reducing the extender content in the cement. The use wooden formwork to help insulate the concrete or placing industrial insulating

blankets and mats over the concrete will also help. The concreting works could also be done in a tent.

“All these measures are reasonably easy to implement and will help tremendously in protecting concrete but there are more sophisticated and integral techniques that can be used in cold weather concreting to prevent costly setbacks – and these are covered in the SCT30 course offered by the School of Concrete Technology,” Roxburgh adds.

The TCI School is the oldest and largest provider of concrete technology education in South Africa and has a wide range of courses that cater for all levels of competency.

For more details about the SCT30 course as well as all the other 2019 courses planned in Midrand, Cape Town and Durban by the School of Concrete Technology this year, phone 011 315 0300 or email sct@theconcreteinstitute.org.za or visit www.theconcreteinstitute.org.za.

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Caption: ‘concrete pour at sunset’:

Casting concrete early in the morning in winter gives the concrete more time to gain strength before it potentially freezes, says John Roxburgh, senior lecturer at the School of Concrete Technology.

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