

○ **COLD WEATHER CONCRETING**

Concreting in cold weather requires some special considerations

- Concrete finishing times are extended due to:
 - Slowing of the evaporation rate at the concrete surface.
 - Concrete temperature rise being reduced due to cold materials, i.e. aggregate, sand, cement & water.
 - Concrete being placed on cold and/or wet ground.
 - Bleed water on the surface.
 - Working the concrete too early.
- Other effects of cold weather concreting:
 - Decrease in early strength development. This requires the delayed removal of formwork.
 - The risk of scaling or delamination due to the concrete surface being over worked.
 - Dusting concrete surfaces due to the bleed water being worked into the surface of the concrete.
- **Do's and Don'ts**
- **Do** use an accelerator in the mix. This could take the form of an accelerating admixture or extra cement.
- **Don't** place the mix too wet. The wetter the mix the longer the finishing times due to more bleed water.
- **Don't** place the concrete on frozen ground. This will reduce the concrete temperature and cause delayed bleeding.
- **Do** remove water, ice and frost from trenches, formwork and reinforcement.
- **Do** compact the concrete by vibration. This will release the bleed water from the concrete matrix.
- **Don't** over bull-float the surface of the concrete. This traps the water in the concrete and retards bleeding. Tip: A bull-float with a piece of flat, dressed timber bolted to the face will open the pores of the concrete and allow bleed water to escape more readily.
- **Do** remove excess bleed water from the concrete surface by dragging a length of hose or rope across the surface.
- **Don't** play with the concrete surface. Tip: Take a break, have lunch, set up the next job.
- **Do** the final finishing operation when the bleed water has disappeared and you can only just mark the surface with a press of the finger. Tip: Cement during hydration grows interlocking crystals, therefore every time you work the concrete surface the crystals are broken and they have to regrow, slowing the hardening process.
- **Do start curing as soon as possible.**
- **Don't Forget: Finishing time is the time from when the last concrete placed was bull-floated to the completion of final finishing.**