

PCI Plant Quality Talk

Quality Enhancement Committee



SERIES 2, ISSUE 7 – VIBRATION OF CONVENTIONAL CONCRETE

Why Vibrate Concrete?

- Vibrating concrete allows trapped air to rise to the surface and escape, and aggregates to align.
 - Applying vibration causes the aggregate particles to oscillate and move.
 - Coarse aggregate particles become more closely aligned with each other.
 - Fine aggregate particles fill all the small cavities between the coarse aggregate particles.
- Concrete becomes stronger and more durable.
- Reinforcement gets encapsulated. Reinforcing bar is an integral part of the concrete; it is vital that the steel is completely encased in concrete.

Best Practices

- Never vibrate the reinforcing bar. This practice leaves air voids and leads to rust forming and eventual failure of the concrete surface. It may also push large aggregates away, weakening the interface between the reinforcing bar and concrete.
- The correct application of vibration is vital for a homogeneous product. Employees operating vibrators should be properly trained.
- Using internal vibrators to move concrete horizontally tends to cause segregation and should be avoided. An exception is made where concrete must flow beneath a horizontal blockout, in which case the concrete should be deposited on one side of the blockout and vibrated until it flows beneath the blockout to a level slightly higher than the bottom of the blockout.
- Internal vibrators should not be forced into the concrete but allowed to sink in under their own weight.
- Avoid inserting or withdrawing the internal vibrator too fast. Withdraw internal vibrators at 1 to 2 in. per second.
- Lifts or layers of concrete to be vibrated should not exceed 24 in.
- The internal vibrator should penetrate the previous layer of concrete a minimum of 6 in., when depth allows, to integrate the concrete between the two layers.
- Avoid touching the form or mold skin with the internal vibrator.
- Avoid touching the reinforcing steel with the internal vibrator.
- Avoid running the internal vibrator outside the concrete, but do not turn vibrator off before removing it from the concrete.
- To ensure a properly functioning tool, vibrators should be cleaned and inspected for damage daily.

References

ACI 309R, *Guide for Consolidation of Concrete*

Note: Please complete this form and return to the Quality Control Manager. All crew members should be observant and report to their foreman anything out of the ordinary on a project. *See something, say something.*

NOTES	ATTENDEE SIGNATURES
DATE	
PRESENTER	