Guide for Consolidation of Concrete
Reported by ACI Committee 309

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CHAPTER 1—GENERAL
Freshly placed unconsolidated concrete contains excessive and detrimental entrapped air. If allowed to harden in this condition, the concrete will be porous and poorly bonded to the reinforcement. It will have low strength, high permeability, and poor resistance to deterioration. It may also have a poor appearance. The mixture should be consolidated if it is to have the properties desired and expected of concrete.

Consolidation is the process of inducing a closer arrangement of the solid particles in freshly mixed concrete or mortar during placement by the reduction of voids, usually by vibration, centrifugation (spinning), rodding, spading, tamping, or some combination of these actions.

Stiffer mixtures require greater effort to achieve proper consolidation. By using certain chemical admixtures (ACI 212.3R), consistencies requiring reduced consolidation effort can be achieved at lower water content. As the water content of the concrete is reduced, concrete strength, permeability, and other desirable properties improve, provided that the concrete is properly consolidated. Alternatively, the