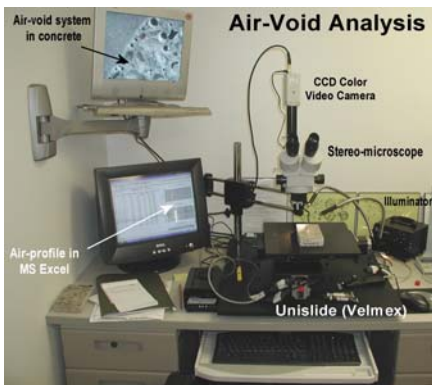


## Air-Void Analysis

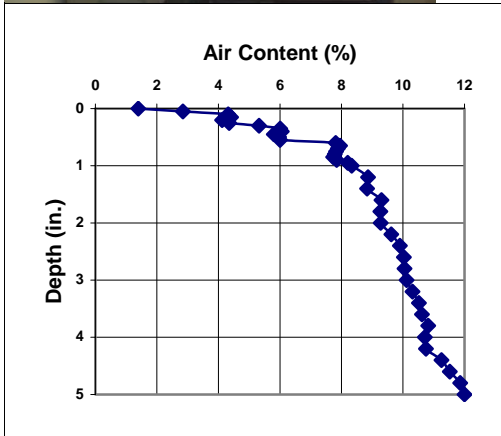
Air voids are an important component of concrete that provide many benefits. Improved workability in plastic concrete, a reduction in bleeding rate, and improved freeze-thaw resistance in hardened concrete are some of its blessings. Lack of adequate entrained air can cause scaling, which can be aggravated by the application of deicing salts. Too much air, on the other hand, reduces the compressive strength of concrete. Every 1% increase of air, at a given workability, can reduce the compressive strength by 3 to 5%. Clustering of air voids along aggregate-paste interfaces also reduces the compressive strength.



An unfortunate curse of entrained air is delamination. Entrained air in a machine-troweled slab increases the potential for delamination.

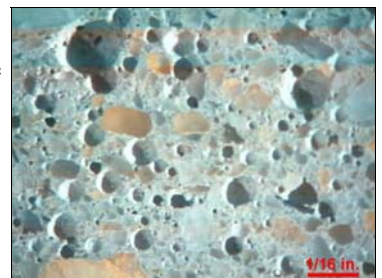
Due to the importance of air voids, ASTM C 457 provides two standardized methods of determination of air-void system in hardened concrete—the Linear Traverse Method and The Modified Point Count Method.

CMC's air-void laboratory has semi-automatic, computer-controlled, air-void measurements and data reduction capabilities that not only provide the overall air-void system of the concrete but also the profiles of air-void parameters through depth. Air profiles are helpful to determine any finishing-induced loss of air at the surface.

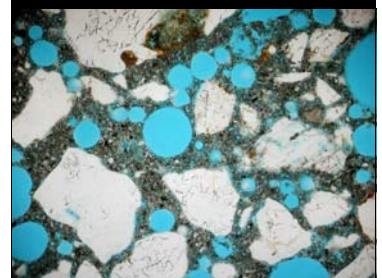


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Four parameters that determine the quality of an air-void system for freeze-thaw resistance of concrete are: (a) amount or volume of air, (b) closeness of the voids, (c) fineness, and (d) distribution throughout the concrete. All these parameters are controlled by the number of voids present and are determined through depth.



*Entrained air voids in lapped section of a concrete*



*Entrained air voids in thin-section of a concrete*

## CMC

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Air-Void Analysis is used for measuring freeze-thaw durability of:

- Concrete
- Mortar
- Grout
- Cast Stone



*Too much air gives a frothy texture of paste and reduces the strength*



*Too little air reduces the freeze-thaw resistance of concrete*