Standard methods for designing high-performance voltage references that are commonly referred to as bandgap references will be discussed. A detailed comparison of the performance characteristics of several of the most widely used bandgap reference will be made. A strategy for designing voltage references that ideally express the bandgap of silicon at the output at all temperatures of interest will be introduced. Three different circuit structures that use voltage and current bootstrapping to achieve bandgap expression at the output will be discussed. A comparison of the bandgap expression approach with popular curvature compensation techniques will be made. Experimental results using the new bandgap expression circuits will be presented.