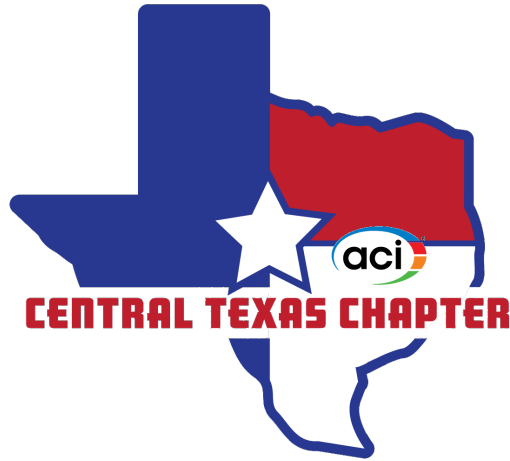




Professional Development Hours (PDH's)

Various States have established the PDH as a requirement for professional license renewal. Typically, this is a self-certifying requirement. Attendees have a personal responsibility to assess the applicability of attended program elements to their professional development. Attendees are encouraged to consult their state licensing board to answer any questions regarding PDH credits. Attendees are hereby advised that neither The Central Texas Chapter of The American Concrete Institute nor the participating speakers guarantee compliance of the individual program elements with the qualifications established by individual State licensing boards.

Certificate of Attendance

This Certificate Documents That

**has attended the following presentation sponsored by the
Central Texas Chapter of the American Concrete Institute**

Thursday, April 11, 2024

via in-person meeting

11:45 PM – 12:45 PM

*Nano Silica In Concrete
by Jim Render with E5 Incorporated*

Jim Render is a consultant with E5 Incorporated. He is a graduate civil engineer from Auburn University and has worked his entire career in the concrete industry. He has worked in the ready mix, admixture and cement industries for 37 years. He has been a consultant for E5 the last 8 years.

Concrete is one of the last industries to employ the innovation that comes with nano technology. We will explore the applications in ready mix concrete and paving that are sweeping the country. The first application is nano silica in concrete to internally cure the concrete from the inside out. Already adopted in several states (Indiana & Ohio) this technology is reducing bridge deck cracking while accelerating construction schedules. The second technology is nano silica used as a pozzolan, a supplementary cementitious material (SCM) that has been used to replace cement, fly ash, silica fume and slag in mixes with less issues in retardation and finishing.

Charles Hammond
ACI President 2024
Central Texas ACI Chapter