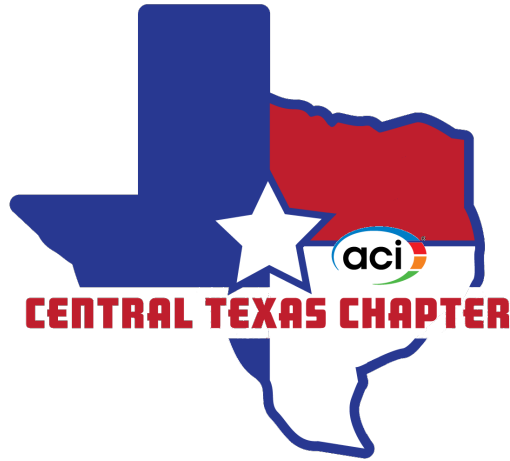




Professional Development Hours (PDH's)

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, September 12, 2024

via in-person meeting

11:30 PM – 12:30 PM

Recycled Aggregates by Dr. Xijun Shi, P.E.

Dr. Xijun Shi, P.E., is an Assistant Professor of civil engineering at Texas State University (TXST), USA. He received his PhD and MS degrees in Civil Engineering, both from Texas A&M University (TAMU).

Concrete is one of the most widely used construction materials. Production of portland cement, however, is carbon intensive, and the cement industry accounts for nearly 8% of global carbon dioxide (CO₂) emissions. The concrete industry also consumes significant amounts of natural aggregate. Currently, global annual production of concrete is 4.4 billion tons. Typically, 70% of concrete is aggregate, translating to 3.1 billion tons of stone and sand being harvested every year. Excessive extraction of rock and sand depletes natural resources and causes environmentally detrimental secondary effects (e.g., erosion, deforestation, and damage to river ecosystems). Steel is another important element in concrete construction. The production of steel rebar is widely considered the largest single source of greenhouse gases produced in concrete construction. For example, steel production accounts for about 51% of the total energy consumption and about 49% of the total CO₂ emission for residential buildings. In this talk, the speaker will present three recently completed projects on using different recycled materials to replace virgin counterparts in concrete. All three studies suggested that recycled materials are a viable option to promote sustainability and achieve cost benefits for the concrete industry.

Charles Hammond
ACI President 2024
Central Texas ACI Chapter