

Introduction

Coreslab Structures has been a leading manufacturer of precast/prestressed concrete products for over 40 years. Today, the company is a major supplier of structural, architectural, and hollow-core solutions with 17 precast/prestressed concrete facilities across North America.

Coreslab prides itself on being a leader in construction innovation, structural design, and sustainable business practices.

In 2020, it demonstrated this leadership by implementing CarbonCure at its Texas facility where it manufactures a complete line of architectural and structural precast building products for parking garages, architectural cladding, and total precast building solutions. In 2021, it expanded its rollout to its Missouri and Arizona facilities.

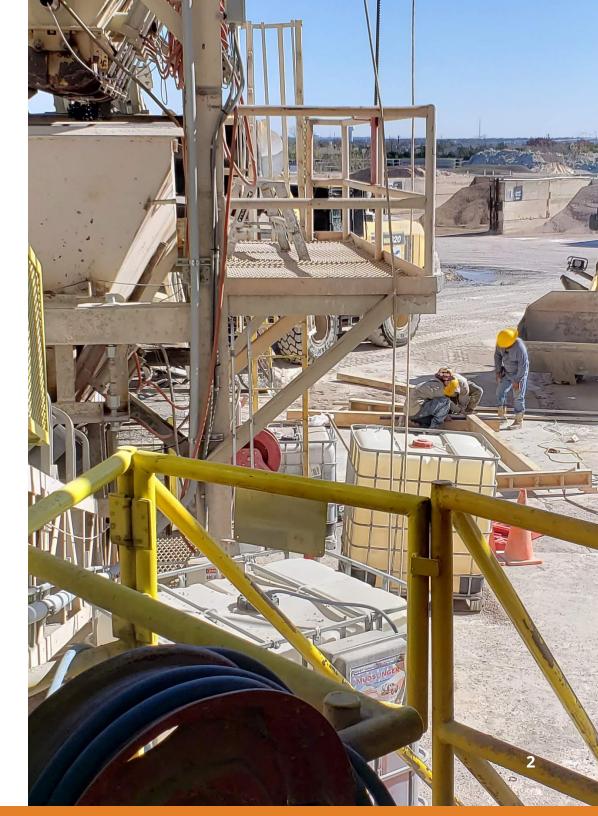
While precast/prestressed concrete producers may be unsure about the opportunity for them in the sustainable construction space, Coreslab proved that opportunities do exist — and are relatively easy to capitalize on when you invest in the right innovations.

Today, Coreslab (TEXAS) Inc. uses CarbonCure in approximately 90% of its products, achieving carbon savings of more than 850 tonnes of ${\rm CO}_2$. That's more than 1072 acres (433 hectares) of forest absorbing ${\rm CO}_2$ for a year.

"The intrinsic properties of precast concrete make it a natural choice for achieving sustainability in buildings."







Coreslab Structures and CarbonCure

Coreslab Structures (TEXAS) Inc. was seeking ways to reduce its carbon footprint in an efficient and non-disruptive way.

It began working with CarbonCure in 2020 when a client—Compass Datacenters—requested the use of low carbon concrete in a new data center in Texas. Compass prides itself on being a good steward of the environment and considers its impact in every area from construction through to operations.

"Our data centers use concrete in many areas, from foundations and sidewalks to precast walls and roofing. We estimate using CarbonCure will reduce our CO_2 footprint by an average of 1,800 tonnes (1,984 US tons) per campus. That's the equivalent CO_2 sequestered by 2,100 acres (850 hectares) of forest or driving a car 6.4 million kilometers (4 million miles)," said Nancy Novak, Chief Innovation Officer at Compass Datacenters.

Coreslab (TEXAS) implemented CarbonCure to meet the needs of its client. The team was impressed with the ease of implementation and the volume of cement reduction.

As a result, Coreslab added CarbonCure to almost all precast mix designs and is now experiencing cost savings of approximately \$1,000 USD per day.

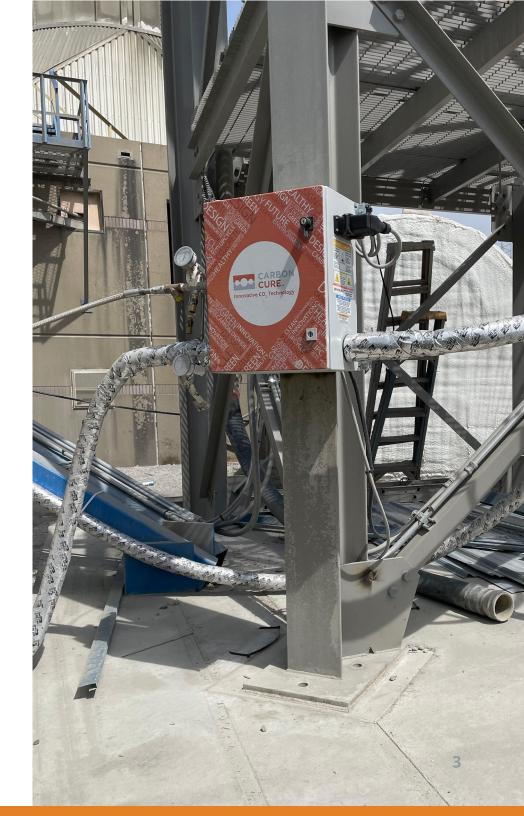
Coreslab (MISSOURI) and Coreslab (ARIZONA) have followed suit and expect to see similar results.

"The use of precast concrete in construction contributes to sustainable practices by its inherent thermal efficiency, recycled materials and aggregates, and reduced waste."

Charles Stone

Quality Control Supervisor, Coreslab Structures (TEXAS) Inc.





Evaluating and Implementing CarbonCure

Coreslab (TEXAS) Inc. implemented CarbonCure in just over one month (42 days) and was confident reducing cement by up to 10% after just 70 days. Coreslab (MISSOURI) and Coreslab (ARIZONA) were implemented in 77 days and 73 days respectively.

The team conducted significant testing to ensure the effectiveness of the technology before using it in the precast forms.

"Whether it be the use of new materials or the adoption of CarbonCure's technology, we conduct trials, trials, and more trials to ensure our innovations are successful," said Charles. "Designs can be calculated and look great on paper, but there is no substitute for actual testing and experience."





Thorough Technology Evaluation with CarbonCure Support

Before reducing cement content, Coreslab conducted a range of tests to ensure the quality of their product remained consistently high. The initial testing was focused on forming and pouring non-structural blocks and optimizing the mix designs.

For precast concrete, high early strength is crucial. The forms must be turned over quickly to keep production moving. As such, strength requirements must be met 16 hours after the concrete is poured.

Precast concrete made with CarbonCure met the requirements for 4000 psi (27.6 MPa) at 16 hours easily.

The team also tested with self-consolidating concrete (SCC). During the slump flow and visual stability index (VSI) tests, the viscosity of the SCC mixture is estimated by measuring the time taken for the concrete to reach a spread diameter of 20 inches (500 mm) from the moment the slump cone is lifted up. This is called the T20 (T50) measurement and typically varies between 2 and 10 seconds for SCC.

Precast concrete made with CarbonCure flowed like honey well within acceptable range for slump flow and VSI.

The team then moved on to test precast structural components. They put concrete mixes with CarbonCure through the Peterman

test whereby pretensioned strands are placed at various distances from the tops of precast concrete bars. After 28 days, the team stresses the concrete until it cracks.

Precast concrete made with CarbonCure passed the Peterman test.

"Getting the most out of trials requires a good plan plus a lot of cooperation, communication between departments, and accurate data recording. It helps immensely to have a plan ahead of testing."

Charles Stone
Quality Control Supervisor, Coreslab Structures (TEXAS) Inc.



The Results

For Coreslab, the decision to implement CarbonCure was all about doing the right thing for its community and the environment.

Today, Coreslab (TEXAS) Inc. uses CarbonCure in approximately 90% of its work and has the ability to reduce up to a remarkable 10% of cement in its mix designs.

Since adopting CarbonCure at the beginning of 2021, Coreslab has already achieved carbon savings of more than 850 tonnes of CO_2 . That's more than 1,072 acres (433 hectares) of forest absorbing CO_2 for a year.

What's Next for Coreslab Structures (TEXAS) Inc.?

Coreslab is seeing huge environmental and cost-savings benefits from reducing 10% of cement content from its precast mixes. With Coreslab (MISSOURI) and Coreslab (ARIZONA) ramping up, efficiencies will only increase.

Charles' advice to other precast companies trying to sell the benefits of CarbonCure to leadership is to, "Highlight the reduction of cement and the impact of reusing captured ${\rm CO_2}$. The process is worth it, as CarbonCure has allowed us to reduce costs, yet retain high strength. In addition, it is helping our customers who are looking for greener initiatives, which is trending more and more."

To learn more about Coreslab's sustainability initiatives, <u>read their in-depth sustainability report</u>. And if you are a precast producer interested in implementing CarbonCure, please <u>get in touch</u>.

CarbonCure has allowed us to reduce costs, yet retain high strength. In addition, it is helping our customers who are looking for sustainable solutions for their projects."

Charles Ston

Quality Control Supervisor, Coreslab Structures (TEXAS) Inc.





Build for the Future. Build with CarbonCure.

CarbonCure has been used on thousands of projects ranging from healthcare to higher education, residential developments, and corporate campuses.

For more information about building with CarbonCure concrete, visit <u>carboncure.com</u>. To get in touch with a CarbonCure representative, send us an email at <u>info@carboncure.com</u> or give us a call at +1 (902) 448-4100 (Worldwide) or +1 (844) 407-0032 (North America).