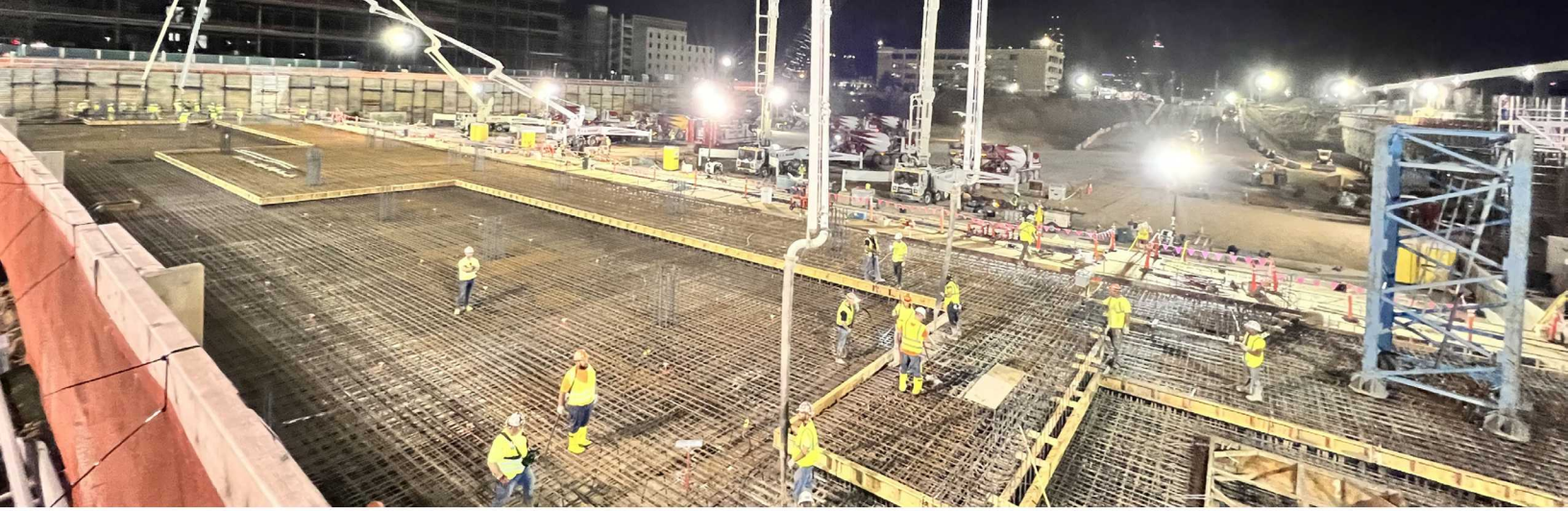

ESG in Construction

Leveraging technology, supply chain, and engineering on the country's largest healthcare construction project

Gilbane and CarbonCure are collaborating on the construction of a new, 16-story hospital for Indiana University Health. The cast-in-place structure is comprised of a 7-story concrete podium and 3-cast-in-place patient towers totaling over 2,500,000 SF. The hospital will include 884 beds, 40 ORs, a radiation/oncology center, 3 pedestrian bridges, and 2 tunnels.

Our presentation will highlight the approach the collective project team took to achieve these ambitious sustainability goals, including reducing embodied carbon by a minimum 10% in the building foundation and structure and supporting IU Health's goal of making Indiana One of the Healthiest States in the U.S.

We estimate that over 190,000 CYs of concrete will be required to complete the building's structure. The majority of the Global Warming Potential is associated with the product stage, indicating design and procurement decisions have the biggest impact.

Gilbane; CarbonCure; MKA International, (SEOR); and Irving Materials, (Concrete Producer and Supplier), all worked in lockstep to create an innovative design and procurement approach that supported IU Health's sustainability goals with utilizing technology at the concrete producer site and performance-based specifications at the design stage.

The team focused on two reduction measures 1) carbon-optimized mix designs and 2) substituting standard Portland cement with pozzolans, thereby maximizing cement replacement to reduce the total embodied carbon in the vertical and horizontal elements of the building's structure. We also targeted a 20% reduction in GWP for concrete reinforcement with product-specific EPDs from the steel mills supplying the project's reinforcing steel.

Additional Comments

Using the impact reduction measures above we anticipate a ~20% reduction in embodied carbon, translating to a savings of 330 million pounds of CO2. The project is on track to save 2.6 million pounds of CO2, equivalent to 1,535 acres of trees absorbing CO2 a year or driving 2.9 million miles in a gas-powered car.

The greatest opportunity to reduce the cement ratio in the concrete mix is within the horizontal superstructure because these mixes typically have lower performance requirements. It was IU's progressive mindset coupled with clear communication that opened the door to innovation, and this tailored approach, allowing the marketplace to innovate and meet the moment.

Gilbane

The concrete foundation and structure represent 60% of the Global Warming Potential (GWP) on the project. The team has deployed two Impact Reduction Measures, carbon-optimized concrete (20% Aggregate GWP reduction) and low carbon rebar. The majority of the project's GWP is associated with the product stage, meaning design and procurement decisions have the greatest impact on achieving the project's sustainability goals.

CarbonCure's technology injects carbon dioxide (CO2) captured from industrial emitters into concrete during mixing. Once introduced to the concrete mix, the CO2 chemically converts into a mineral and is permanently trapped in the concrete. The process improves the concrete's strength, enabling the concrete producer to optimize mixes while maintaining performance. The specifications developed for the project are performance-based and afforded suppliers the flexibility to provide low-carbon mixes that meet the project's varying structural performance requirements, construction schedule, and placing and finishing requirements.

Gilbane