

# Low Embodied Carbon Challenge

## The Reed at Southbank



**Project:**

Reed Residential Highrise

**Location:**

Chicago, IL

**Project completed**

2023

**Owner/s:**

LendLease

**Applicator/Contractor**

McHugh Concrete Construction

**Designer/Architect/Specifier**

Architect: Perkins & Will

Design Engineer: MKA

**Market sector**

Ready Mix Producer: Oremus Materials, Inc.

**Products used & amounts**

MasterGlenium 7920

MasterSure Z 60

MasterSet DELVO

MasterSet AC 534

**Contacts**

Brad Pfanestiel

Dan Bobrowski

## Project Profile

The Reed at Southbank



The Reed at Southbank under construction.



The Reed at Southbank completed project.

### The background

LendLease wanted to build the first residential high-rise in Chicago to use low embodied carbon concrete.

They set new, extremely low embodied carbon content requirements compared to typical standards for the concrete used in the 41-story Reed Residential High-Rise project in Chicago's Southbank development.

### The challenge

Achieving these low embodied carbon targets, or Global Warming Potential (GWP) values, while also meeting the high performance and constructability requirements set by the structural engineer and concrete contractor, posed quite a challenge.

Ultimate concrete strengths of 4000, 6000, 8000, and 10,000 psi were required. From a constructability standpoint, the concrete needed to be pumpable, placeable, and finishable. The flatwork concrete mixtures also required set times of 4 hours and had to meet post-tensioning strength requirements within 16 hours. All of these constructability requirements had to be met without exceeding the developer's GWP limits for the structure.

GreenSense™ mixture designs were developed, lab tested, field tested, and then utilized to meet all of the requirements to the satisfaction of all parties.

### Our solution

GreenSense Concrete mixture design optimization program.

### The customer's benefit

- The ready-mix concrete producer was able to meet the low embodied carbon concrete specifications while also exceeding the challenging constructability needs of the concrete contractor.
- Through field trial proof pours, the concrete producer was awarded this 29,000 cubic yard project.
- All concrete met and exceeded the design specifications.
- The concrete producer successfully positioned themselves as their market's leader in producing low GWP concrete that meets the concrete contractors' challenging performance standards.



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### Projects facts at a glance

- 41 story residential high-rise
- One of the lowest GWP values ever specified for a Chicago structure
- 4-hour set time requirement
- Minimum concrete strengths at early age were required to meet scheduling demands.
- 29,000 yd<sup>3</sup> of 4000, 6000, 8000, and 10,000 psi compressive strength concrete were required.
- Concrete exceeded all pumping, placing, and finishing demands.
- Concrete contractor is now recommending this concrete to all future clients.

### About Master Builders Solutions

Master Builders Solutions is a leading global manufacturer of concrete admixtures, as well as other sustainable solutions for the construction industry, focussed on delivering its vision: **Inspiring people to build better**. Master Builders Solutions provides value-added technology and market-leading R&D capabilities to improve the performance

of construction materials and to enable the reduction of CO<sub>2</sub> emissions in the production of concrete. Founded in 1909, Master Builders Solutions has ca. 1600 employees operating 35 production sites globally, supporting their customers in mastering their building challenges of today – for a decarbonised future.

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