Storex Sunbury Case Study

atelier ten

aztec CONSTRUCTION

CAPITAL

Cemvision

Threesixty Architecture

Will Rudd

Executive Summary

In October 2024, Cemvision and STOREX Self Storage/EQT Real Estate with partners Aztec Construction, Will Rudd, Capital Concrete and Atelier Ten delivered a ground-bearing slab using Cemvision Re-ment Massive, an ultra-low carbon cement binder as part of the STOREX Sunbury project.

The trial aimed to demonstrate performance equivalence to conventional concrete (C32/40) while significantly reducing embodied carbon. Tests performed according to BSI 350 Flex.

- Key metrics show high early strength at 25.5 MPa after 3 days
- Outstanding later-age strength of >67 MPa after 90 days
- 73% reduction in cradle-to-gate carbon emissions compared to a reference CEM II/B-V mix.

Project team

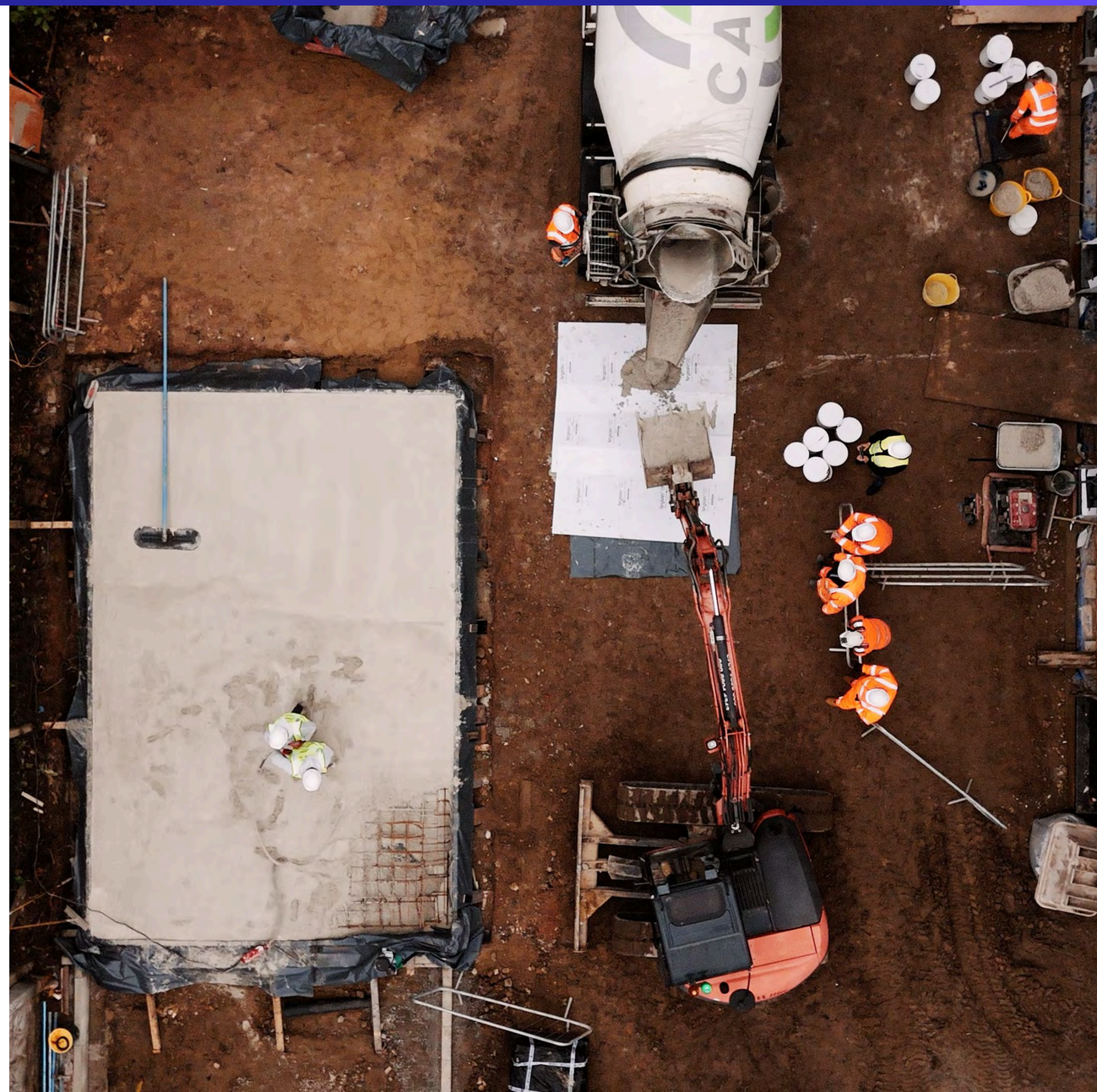
Client: STOREX Self Storage
Principal contractor and coordinator: Aztec Construction
Architect: 360 Architecture
Carbon embodiment assessor: Atelier Ten
Ready-mix concrete supplier: Capital Concrete
Cement supplier: Cemvision
Offsite materials testing: Sandberg concrete lab
Structural engineers: Will Rudd

Context

The Sunbury site served as a real-world testbed for evaluating Cemvision's Re-Ment Massive binder under UK conditions. A 35 m^2 structural slab formed part of a single-storey direct access block at STOREX Sunbury, meeting structural demands while showcasing ultra-low carbon binder technology.

- Performance was benchmarked against a GGBS-enhanced C32/40 OPC mix using both compressive strength and durability criteria.

- The concrete mix was produced with Cemvision Re-ment Massive which is an ultra-low carbon hydraulic binder using circular materials from other industries and designed to serve as a sustainable alternative to Ordinary Portland Cement (OPC) in a range of applications. Re-ment Massive offers high-performance concrete with a remarkably reduced carbon footprint. Unlike traditional cement, Re-ment Massive is produced without calcination and relies instead on alternative industrial waste slags.



Criterias, mix design and testing

Application

- 35m² ground bearing slab that supports a single-storey steel storage unit

Performance

- Compressive strength: C32/40
- Exposure classes: XC3/XC4, XF1

Standard

- BSI Flex 350 v2 for performance based specification to validate performance

Design requirements

- The Direct Access floor slab shall be designed for a loading of 500kg/m²
- The reinforced concrete ground floor slab is to be constructed in single pours.
- Powder floated concrete floor finish light grey. It shall be smooth polished, without defects, clean and consistent finish, with slip resistance compliant with local building regulations.
- A floor hardener and a water based liquid dust proofer additive
- Curing compound to limit surface drying and cracking. Laser leveled with a power floated finish.

Component	Quantity
Cemvision Re-ment Massive	370 kg
Gravel 4/10 mm	311 kg
Gravel 4/20 mm	726 kg
Sand 0/4 mm	836 kg
Water	166 l
Superplastiziser, Masterglenium 1966	2590 ml
Retarder, Sikatard 932	2220 ml

Performance test results and contractor feedback

Property		Result
Compressive strength	3 days	25.5 MPa
	7 days	46.0 MPa
	28 days	58.9 MPa
	90 days	67.0 MPa
Open time		2 hours
Chloride migration resistance		Dnssm = 0.60 × 10^{-12} m^2/s
Elasticity	90 days	41.0 MPa^2
Tensile strength		5.0 MPa
Shrinkage		~0.00015 strain

Contractor and finisher feedback

- The mix was placeable and pumpable, consistent with normal concrete.
- Set time was sensitive to ambient temperature.
- Wet blanket curing helped avoid surface dusting.
- The delivered mix showed uniform consistency and ease of handling on-site.
- Performance was consistent with traditional concrete when properly cured.
- Compatible with existing batching and delivery systems.
- Required wet curing to reduce surface dusting.
- No major site adjustments needed aside from curing strategy.

Impact summary and results

- Cemvision Re-ment Massive shows up to 73% reduction in embodied carbon (70.35 kg CO_2e/m^3 vs. 263 kg CO_2e/m^3 for reference mix)
- Cemvision Re-ment Massive avoids use of Portland cement thus being able to replace virgin materials with industrial by products
- Exceeds structural strength class C32/40, achieving C50/60 performance (avg. 58.9 MPa @ 28 days)
- Excellent chloride migration resistance, supporting durability in aggressive environments
- Compatible with traditional batching, delivery, and placement methods
- Validates Cemvision's low-carbon binder technology under real site conditions

Up to

73%

lower CO_2

Next steps

- Extend testing to vertical and suspended structural elements.
- Develop EPDs
- Refine mix for C32/40 with reduced binder.
- Plan future trials in different UK climate zones.
- Conduct long-term durability monitoring beyond 180 days.

Cemvision

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