

STORIES OF STRENGTH

Railcar Facility Georgia



We're going to need a tougher slab.

In Augusta, Georgia, thousands of tons of railroad cars and steel components are shipped to and from a major rail maintenance facility every week, wreaking havoc on the hardstand concrete slabs that cover the yard. The punishment from rolling loads, impact loads and abrasive wear is so extreme that the facility has maintained a quarterly rip-and-replace program to deal with the persistent failure of their slabs for more than 20 years.

Proposed Ultra-High Strength Design In an effort to extend the service life of the concrete and reduce replacement projects, an alternative design was proposed which increased overall thickness of the slab, required steel reinforcement, additional sub-base preparation, corresponding excavation, and most significantly, cost.

Maybe there's a better way? Enter Mr. Brett Cooper, owner of CPI. He heard about the impressive results EdenCrete™ had achieved at the GDOT trial [see story] through Augusta Ready-Mix, so he reached out to EdenCrete™ for a consultation about the project. After careful study, the team ascertained that CPI could achieve the durability, quality and longevity the railcar facility desired by using EdenCrete™ carbon concrete additive—without much else.

The Test Using the same formulation as the GDOT trial [minus the accelerator], CPI poured a 10 cubic yard slab enriched with EdenCrete™, and a second "control" slab without EdenCrete™. Both slabs were 6 in. thick. Six months later, the EdenCrete™ slab looked great and had not cracked. However, the "control" slab showed major cracking.

**Concrete 6"
w/ EdenCrete™**

**Backfill to 6" grade,
only as necessary**

The Results The new results with EdenCrete™ were so promising that CPI and the facility's owner decided to move forward with the EdenCrete™ solution. The EdenCrete™ solution is expected to at least double the concrete life, yet require much less concrete, no steel reinforcing and greatly reduced excavation time. Consequently, the budgeted repair costs, with EdenCrete™, are 40%-45% less than the earlier proposed ultra-high strength concrete design.

Proposed Slab w/ EdenCrete™
Slab Life [< 5yr +]

Areas of significant improvement for this application



ABRASION



FLEXURAL



SHRINKAGE



PERMEABILITY



TENSILE



COMPRESSIVE



STAINING

EdenCrete™ enhances concrete in all seven areas, but was specifically selected for abrasion, permeability and compressive strength for this project.



1



2



3

EdenCrete™ test slab [1] shows no signs of cracking or wear, while the control slab [2] without EdenCrete™ is showing cracking already.
3. Example of heavy Railcar axles and other parts that are constantly impacting the concrete slabs.

“We couldn’t be more pleased with this. It’s not every day you get to reduce the cost of a project for a client almost 50% and still deliver to them the quality and reassurance they’re asking for in the service-life of the concrete. EdenCrete™ is a great concrete additive and we are excited to have discovered its’ existence. This technology could be a game changer for the concrete industry” said Brett Cooper, [V.P. of CPI].

Harness the strength of carbon nanotubes for your next pour.

Developed by Eden Innovations, LLC, **EdenCrete™** is a carbon nanotube-enriched liquid additive that elevates concrete structures to new levels of strength and toughness. When added to concrete mixtures, it performs like multiple additives rolled into one: It boosts surface abrasion resistance and produces extremely low permeability while improving tensile-strength like no other product on the market today.



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