

CMC Steel Alabama

Birmingham, AL, USA

PRODUCT USED:
Hard-Cem[®]

OWNER:

Commercial Metals Co.

CONTRACTOR:

MSE Construction

READY-MIX SUPPLIER:

Ready Mix USA

DISTRIBUTOR:

M2 Solutions, Inc.

BACKGROUND

Commercial Metals Co. (CMC) is a major steel manufacturer with the capacity to produce 5.4 million tons of steel products a year between their 10 mills.

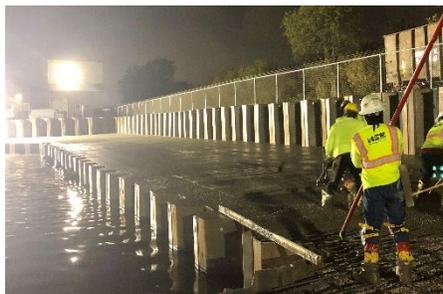
The process of producing such products, like beams, rebar, and large-scale steel components, requires a lot of heavy equipment. And between the heavy equipment and the steel being made, the concrete floors in each mill often encounter significant abrasion, reducing their life cycle. In fact, this type of environment is one of the most aggressive abrasion environments for concrete.

To combat this abrasive environment, CMC's mill in the United States of America's Birmingham, Alabama, previously used trap rock in a mix with 34.47 MPa (5,000 psi). It was an expensive option for the facility, and it was also difficult to source and transport the trap rock from North Carolina. As a result, the mill sought an alternative durability solution that would be long-lasting and provide true abrasion and erosion resistance for their concrete flooring.

SOLUTION

Hard-Cem soon became that solution. As an integral hardening admixture, it provides abrasion and erosion resistance while doubling the concrete's service life. Added at the time of batching, Hard-Cem also reduces exposure to silica dust at the worksite.

With that in mind, the mill used Hard-Cem in a design mix of 34.47 MPa (5,000 psi) with a 10.16 cm (4 in) to 17.78 cm (7 in) slump and some granite aggregate to increase the service life of the mill's new concrete and minimize its wear abrasion over time.



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As part of this process, Hard-Cem was dosed at 66 lb (30 kg) per cubic yard in water-soluble bags at a ready-mix plant.

In total, Hard-Cem was used in about 145 m³ (190 yd³) of concrete, which was poured near a water bath. The water bath itself contained small metal shavings that are removed by heavy equipment going over the concrete. The shavings are then recycled, which is an important part of the industrial process. All of which causes severe abrasion and erosion. Being integral to the concrete mix, however, Hard-Cem will protect the concrete from abrasion and erosion from within, extending the service life of the manufacturing facility and significantly reducing maintenance costs for CMC.

