

# Canada Post Pacific Processing Centre

Richmond, BC, Canada (2013)

PRODUCT USED:

**Hard-Cem®**

**OWNER:**

Canada Post

**ARCHITECT:**

Kasian Architecture

**ENGINEER:**

Weiler Smith Bowers

**GENERAL CONTRACTOR:**

Bird Construction Co.

**READY-MIX SUPPLIER:**

BURNCO Rock Products Ltd.

**DISTRIBUTOR:**

Cementec Industries Inc.

## BACKGROUND

After years of diligently serving downtown Vancouver, Canada Post knew they needed to upgrade their work in the area by the early 2010s. While their Vancouver Parcel Delivery Centre and Vancouver Mail Processing Plant had kept up with the times for a while, they were not large or efficient enough to deal with the latest changes in consumer demand. As a result, Canada Post chose to retire those facilities completely and create a whole new state-of-the-art replacement facility, which would be known as the Pacific Processing Centre.

Worth \$200 million and covering 65,032 m<sup>2</sup> (700,000 ft<sup>2</sup>), this massive facility was designed to meet an increase in processing levels. As part of that, it was given the latest technology and strategically positioned to be close to the Vancouver International Airport in Richmond so that it could manage more mail than the previous facilities. That would allow it to process up to four million pieces of mail daily and handle at least a third of Canada's inbound mail. This location also ensured the facility could capitalize on the growth in e-commerce and even accommodate the Canada Border Services Agency when they needed to conduct mail inspections.

It would be a significant improvement to Canada Post's overall service. But to remain that way consistently for years to come, the new facility's concrete structure would need to be able to withstand heavy abrasion from high-traffic areas, including the spaces for mail sorting, truck traffic, and exterior building aprons. Without that ability, the facility's concrete would likely wear down quickly enough that Canada Post would have to close it down frequently for repairs or replacement work, which would hinder the quality of Canada Post's service.

## SOLUTION

There were a few solutions out there that Canada Post could use to potentially treat their concrete durability concern.



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The most traditional choices would be dry shake hardeners and liquid hardeners, but their use wouldn't offer much quality assurance. After all, dry shake hardeners come with a time-consuming application process that requires multiple passes and has a limited time frame. That makes their application highly error-prone. For instance, if they're applied too early, bleed water can get trapped in the concrete and the concrete's surface can delaminate. And if they're applied too late, they're harder to work into the concrete at the correct dosage. Meanwhile, while somewhat easier to apply, liquid hardeners don't leave a strong lasting impact. After application, they tend to penetrate the concrete within several millimeters or less than an inch of the material's surface, leaving the concrete without protection once that top layer has worn away.

In short, neither dry shake hardeners nor liquid hardeners could produce results that would mitigate repair or replacement work for the concrete of Canada Post's new facility. Canada Post would instead have to turn to a more innovative solution: Hard-Cem, an award-winning concrete hardening admixture.

As an admixture, Hard-Cem already simplified the application process. Unlike the multiple passes that dry shake hardeners required, workers would only need to do one step: add Hard-Cem into the concrete mix during batching. From there, the admixture would be able to impart its deformation-resistant metal-mineral microstructure to the whole mix, which would help support the typically weaker microstructure of the cement paste in the mix. All of which was proven under *ASTM C627* and *ASTM C779* testing methods by reputable third-party companies, such as AMEC Earth & Environmental and Braun Intertec Corp., to at least double the wear life of the concrete despite the impact of heavy abrasive forces. Due to this increased resistance, the concrete would require fewer repair and replacement sessions, reducing the chances of the center closing and even lowering its lifetime carbon footprint, making it more resilient and sustainable.

Such resiliency was perfect for Canada Post's Pacific Processing Centre and led the postal company's construction team to use 8,750 m<sup>3</sup> (309,003 ft<sup>3</sup>) of Hard-Cem concrete in all the flatwork for the mail sorting, truck traffic, and exterior building apron spaces. The end results have left Canada Post with a top-quality processing center that has LEED Silver certification and still stands today.

