Stoney CNG Bus Storage and Transit Facility

Calgary, AB, Canada (2019)

PRODUCT USED:
Hard-Cem®

DEVELOPER:	ARCHITECT:	GENERAL CONTRACTOR:	READY-MIX SUPPLIER:
Plenary Group	AECOM	PCL Construction Ltd.	Lafarge

BACKGROUND

For years, the City of Calgary in Alberta, Canada, knew they'd need a new indoor facility to be able to store and maintain Calgary Transit's new fleet of compressed natural gas (CNG) buses alongside their existing diesel buses. So when the opportunity to do so arose, they tasked PCL Construction Ltd. and Lafarge with building a massive 44,300-square meter (476,840-square foot) concrete floor for the facility.

Such an immense floor would make up the basis for the city's new $174 million bus facility, which would become the largest indoor CNG bus complex in North America. Located in Stoney, Calgary, this facility would house a minimum of 36 maintenance bays, two detail cleaning bays, infrastructure for on-site CNG fueling, and staff facilities. It would also be able to house 424 buses, which would include a fleet of 12.19-meter (40-foot) standard buses, 18.29-meter (60-foot) articulated buses, and 10.67-meter (35-foot) or smaller shuttle buses.

To ensure everything within this new facility would get the long-lasting flooring it deserved, PCL Construction Ltd. and Lafarge first had to consider how durable the flooring would need to be. With the constant heavy traffic from the many buses housed within, the flooring would likely be exposed to severe abrasion and wear from the hard particles in the bus tires. At the same time, support vehicles, service equipment, dropped tools, chemical attacks, and freeze-thaw conditions would also cause damage to the flooring.

After enough damage, the deterioration to the flooring's surface would become a safety hazard for people and equipment, negatively affecting the operational efficiency of Calgary Transit's new facility with costly repairs and even suspended services.

SOLUTION

To create a durable enough concrete floor to avoid these safety concerns, Lafarge recommended and promoted the use of Hard-Cem.

KRYTON®
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Hard-Cem's proprietary technology provides concrete with superior hardness and improved durability in relation to both abrasion and erosion. Added at batching, Hard-Cem is an integral concrete hardener that provides full-depth concrete hardening to increase the abrasion and erosion resistance of concrete that's subjected to heavy traffic and long-term abrasion from vehicular wear in transit facilities. That ensures the concrete surface for flooring like that of the Stoney CNG bus storage and transit facility will last longer, reducing maintenance costs and extending facility service life for a clean, safe workplace.

With that in mind, Lafarge supplied over 7,500 m^3 (9,800 yd^3) of 35 MPa (5,075 psi) Exposure Class C1 Hard-Cem concrete. In all, over 1,500 concrete trucks were used to pour this concrete.

By March 2019, the Stoney CNG bus storage and transit facility had opened, joining the growing list of Hard-Cem transit applications, which include significant projects such as the Toronto Transit Commission's McNicoll Bus Garage and Calgary Transit's bus barn upgrade. It also joined Kryton's list of award-winning projects, earning LEED Gold certification and four awards that same year. These awards consisted of two merit awards from the Consulting Engineers of Alberta for the project's building engineering and sustainable design, an award for green building excellence in new construction from the Canada Green Building Council, and a silver infrastructure award from the Canadian Council for Public-Private Partnerships.

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Kryton International Inc.
1645 East Kent Avenue, Vancouver, BC, Canada, V5P 2S8 | T 1.604.324.8280 | F 1.604.324.8899 | W kryton.com | E info@kryton.com