

# A Wonderful FLAVOUR OF PRESERVE

Restoration products and services forge full steam ahead and the results are outstanding

by ROBIN BRUNET

It's becoming a familiar but welcome statement in construction circles, this time voiced by Nick Trovato, managing principal, RJC Engineers as it pertains to restoration work. Trovato says, "Last year was very busy despite COVID, and the same is proving true for 2022. We're busy with a wide scope of projects that require a variety of services, not just one. We continue to work as prime consultants on building envelope restoration or replacement projects. We're also doing more 'whole building' energy modelling to meet requirements for new construction or for extensive restoration work.

"Additionally, we're heavily involved in structural restoration: we have a large stock of aging buildings that are exposed to harsh climatic conditions and require maintenance or repair to help them reach their expected life. And then of course there's the creative side of restoration: rehabilitating historic structures. In some instances all of our services are required for a single project, the best example of which is our recently completed work on the St. Andrew's-Wesley United Church in Vancouver. For that project RJC acted as the prime, structural, and building enclosure consultants."

This year, RJC is involved as part of a design team in the revitalization and reuse of Edmonton's historic Rossdale Power Plant complex, which was built in 1902 and decommissioned in 2011. Three buildings have been preserved at the site, including a low-pressure plant and two pump houses, and the city has deemed the site as having potential for not only retail and residential development, but for indigenous historical and educational purposes.

As civic leaders decide exactly what form the reuse will take, structural restoration and re-roofing work is underway to protect the underlying facility. "It's an exciting project and we are glad to be part of the team," Trovato says. "The task is to preserve the main architectural elements of the complex, while breathing new life into it."

As is the case with other building trades, the restoration sector continues to deal with supply chain issues. "Suppliers are doing their best to get everything they need in anticipation of a busy 2022 summer, but I think the shortages will remain," Trovato says. "The situation is going to take a long while to resolve."



Rossdale Power Plant, Edmonton, AB

Shortages especially impact providers of restoration materials. Brian Salazar, national business development manager Euclid Canada, explains, "A lot of our products use raw materials that are petroleum based, and we deal extensively with U.S. suppliers – and as anyone in this business knows, even temporary phenomenon such as the big freeze in Texas in 2020 caused havoc in the supply chain. In that specific case it caused a shortage in epoxy, and we're still trying to catch up."

Salazar goes on to note that, "While pent up demand is great from a business viewpoint, it's not helping the situation. Instead of 10 days to receive something it now takes two months, and freight costs have tripled in some cases. Still, we're confident that the situation will eventually improve, and in the meantime we've been reformulating some products in our labs in Cleveland, Ohio, and St. Hubert, Quebec. The outcome of this is we've been successful in making the reformulations more durable and user friendly, and this has contributed to us going gangbusters with activity since May of last year, with no slowdown in sight."

One new product of note from Euclid Canada is Versaspeed 100, a versatile, single component, rapid strength gaining repair mortar for horizontal as



Application of Versaspeed 100 repair mortar.

well as form and pour repair projects. Requiring only the addition of water, Versaspeed 100 is a low shrinkage, high early strength material that is easy to use for fast turnaround projects.

Salazar says, "Versaspeed 100 is being used in the ArcelorMittal steel foundry in Hamilton, where crews are repairing floors in the blast furnace areas and need a quick turnaround, as this is a 24-hour operation that can't be shut down. The product has great compressive strength, with up to 10,000 psi upon curing."

Maxime Duzyk, director of building science and engineering at Huntsman Building Solutions, anticipates that 2022 will be a busy year, and despite the supply shortages he says, “We’re still working on developing new products and improving our current solutions, while managing raw materials and stock to better serve our customers’ needs. Huntsman Building Solutions has always had a major focus on sustainability, innovation, and R&D, and we’ll continue working hard and promote our worldwide leadership as polyurethane spray foam company.”

Duzyk says two of the more significant developments from Huntsman Building Solutions of late are the D-Max wall assembly, which he regards as “a new way of building,” and Heatlok Soya HFO closed-cell spray foam. The former is an assembly allowing the installation of spray foam insulation from the interior of the building while managing the thermal bridging of the studs and the structure. Weather conditions and access to the facades are no longer an obstacle to the progress of the projects. In addition, the D-Max wall is a high-performance assembly with effective thermal resistance and airtightness, and yet remains very thin.

Heatlok Soya HFO is a closed-cell spray foam designed as a continuous insulation solution contributing to protection on several fronts, with superior adhesion. Heatlok Soya HFO product contains a total of 22 percent renewable soybean oil and recycled plastic. When used with the D-Max Wall, the assembly acts as an insulation, air barrier, vapour barrier in a single application, contributing to faster construction and cost savings (the spray foam is installed completely from the interior and reduces the thermal bridge of the studs by filling the gap between the exterior sheathing panel the studs; this gap is variable and created with Z-bars).

Kathy Fowler, director of marketing at Kryton International Inc., says of 2022, “Market recovery is looking positive. We are seeing more demand for building materials to support sustainable concrete construction, to build climate resilient structures, and to reduce carbon emissions – and we’re well positioned to support our customers with our Smart Concrete products. We also recently opened a new manufacturing facility in Calgary to increase our production capacity in response to global demand.”

The facility in question is operated by Cementec Industries Inc., a wholly owned subsidiary of Kryton. Cementec manufactures and distributes award-winning Hard-Cem, an integral hardening admixture that increases concrete resistance to abrasion and erosion. Cementec is also the only manufacturer of silica fume products in Western North America, with Con-Fume widely used to add durability to concrete construction and XL-Fume used in mining, oil, and gas infrastructure (these products are part of Kryton’s suite of Smart Concrete solutions, all of which are designed to help builders meet new OSHA regulations and tight deadlines, while reducing skilled labour requirements).

Fowler notes that with regards to COVID’s ongoing impact on jobsites, “To manage the construction schedule effectively, many of our clients are choosing to add integral products like KIM and Hard-Cem to the concrete at the time of batching. This allows them to build dry and durable structures without the need to schedule skilled workers for the application of surface-applied products on site.”

As for supply shortages, she remarks, “As an industry we’re working together to plan for longer shipping



D-Max wall assembly.

time, and that’s alleviating some of the pain. Of course, the damage to the infrastructure in B.C. due to the recent floods have made it more challenging, but B.C. road builders have done a tremendous job in getting major routes open as soon as possible.”

Another leader in crystalline technology, Xypex Chemical Corporation, is forging ahead with new products to support the preservation of infrastructure, one being Xypex Bio-San C500. This admixture is a unique way of protecting concrete in harsh sewage conditions where hydrogen sulphide causes microbial induced corrosion (MIC), and it’s recommended for use in areas where H<sub>2</sub>S gas is likely to accumulate, including sewer lines with long retention times, sealed or unvented manholes, and areas of high turbulence such as lift stations, drop structures, force main outflows, and head works.

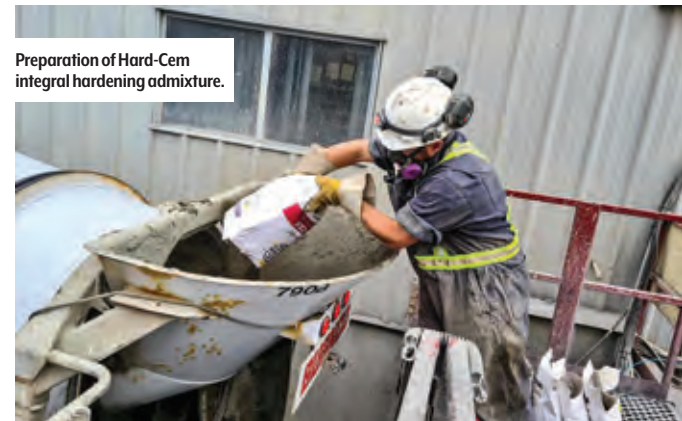
Xypex Bio-San C500 contains mineral solids that remain permanently fixed within the concrete throughout the life of the sewage structure. These solids kill acid-generating microbes such as Thiobacillus. Combined with Xypex’s crystalline technology, Bio-San C500 protects concrete from infiltration and exfiltration as well as resist acid and sulphate attack. After placement and curing, the crack-healing properties continue to function throughout the service life of the concrete.

Canada was the first country outside of Italy where Mapei established production facilities, and today its products are fundamental to Canadian construction. Demand is such that late last year the company announced the expansion of its Laval, Quebec operations with a new 4,715-square-metre powder-production plant and distribution facility. “The existing facility has proven to be such a tremendous asset in providing us with manufacturing and warehousing for Eastern Canada, and this expansion will greatly increase our ability to meet our customers’ demands in those areas,” said Luigi Di Geso, president and CEO of Mapei North America.

This new plant complements the existing 11,892-square-metre facility, which serves as Mapei’s head office and whose adjacent plant also produces polymers, adhesives and, more recently, admixtures for concrete.

In terms of new products, Mapei recently introduced Planitop 13, a one-component, polymer-modified, fibre-enhanced, extended-working-time, cementitious repair mortar with corrosion inhibitor designed for vertical and overhead applications.

As for projects, some undertakings are so long in development they require work that in any other situation would be thought of as restoration. For example, Grande Prairie Regional Hospital began construction in 2011, and Mapei products helped installers complete unfinished work in various areas of the complex. The work consisted of 2,453 square metres of resinous industrial flooring for the



Preparation of Hard-Cem integral hardening admixture.



Application of Planitop 13 cementitious repair mortar.

ambulance bay and basement, 9,290 square metres of resilient flooring, and 8,360 square metres of large-format tile installation for walls and floors, as well as waterproofing in select areas.

Since the hospital basement’s concrete surface was cracked and ill-prepared to take on the epoxy resinous topping (as was the ambulance bay’s concrete surface) contractors went about shotblasting and grinding the surface. Levelling was done with Primer L, acrylic latex primer for concrete, and this enhanced the bonding of Ultraplant M20 Plus, the quick-setting, high-compressive-strength, self-levelling, calcium-aluminate-based underlayment that followed. A thin layer of Mapefloor I 302 SL was applied as a primer and then again as an epoxy-resin basecoat to take advantage of the product’s excellent chemical and abrasion resistance. Mapefloor Finish 54 W/S was then used to provide a semi-gloss, aliphatic, polyurethane topcoat.

The ambulance-bay required an industrial flooring solution with high load endurance, so over a layer of Primer SN, installers used Mapefloor PU 400 polyurethane basecoat that can be used as a waterproofing membrane for elevated concrete surfaces. Mapefloor Finish 450 aliphatic, polyurethane topcoat was then applied to provide added resistance to chemical agents, including diluted acids, bases, oil and fuel. Elsewhere in the hospital, contractors used Ultrabond ECO 360 premium, high-performance adhesive for wood and plank flooring. **A**