Project Scope

When Resolute Forest Products was determining a solution for rehabilitation and protection of their 50,000 square foot concrete clarifier damaged from mild chemical attack and abrasion from their pulping process they contacted MBI Corexcel, a local corrosion-resistant specialized contractor, for assistance. General Manager - Pierre Fauteux - called Solhydroc, a long tenured distributor of Sauereisen, Inc (USA) products for assistance. Owner Pierre Auger met with Resolute Forest Products personnel months in advance of construction to ensure that the customer would be satisfied with the recommended engineered solution offered. Mr Auger commented "When Mr Neron of Resolute and Pierre Fauteux asked me to provide them with a solution to their clarifier I immediately thought of the Sauereisen products. In my years of association with Sauereisen I knew they could meet the challenges and offer long term service. Their technical service is unmatched in the industry and I felt very comfortable that the customer would be satisfied. Plus, Quebec (Clermont) is a beautiful place to visit in the early summer."[1]

Resolute Forest Products, Inc (Clermont, Quebec, Canada) manufactures 345,000 metric tons of quality newsprint paper exported to the United States and Europe each year. The solution required coordination of the facility, contractor, and coatings manufacturer so that project completion would not disrupt operation and result in minimum downtime during construction. The materials selected were: a vertical trowel-applied epoxy repair product; a pour & spread horizontal repair material and 40 mils of Sauereisen Novolak fiber-reinforced, spray-applied lining. According to Mr. Yvon Cloutier – Clermont Engineer –

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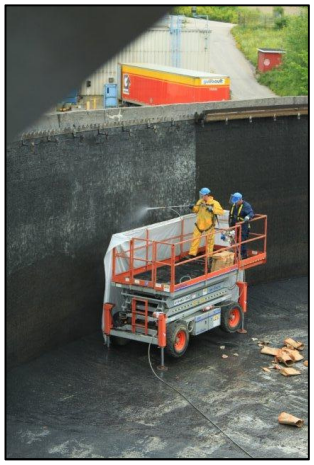
MBI Corexcel, an industrial corrosion resistant specialized contractor from Bécancour, Québec Canada was the selected contractor due to their experience with concrete rehabilitation and reputation in the marketplace. They employed over 20 skilled craftsman working two (2) 12-hour shifts to complete the project in the period of time allowed per contract. Pierre Fauteux – Corexcel MBI General Manager - was responsible for their company's coordination of concrete repair and rehabilitation using the

Sauereisen products along with removal and replacement of steel weir baffle scum-trough overflow carriages attached to the structure. Mr. Fauteux said the following about the project "We have been working many years with our preferred supplier Solhydroc and Pierre Auger; we knew we could benefit from their experience with Sauereisen products and their strong technical support"..

An Engineered Solution

A synopsis of the project with accompanying photograph(s) is as follows:

Upon arriving at the job site, it was recommended that the contractor do surface preparation on 100 square foot area(s) of both the wall and floor; apply applicable epoxy mortar repair system; and spray the fiber reinforced system under the supervision of Mr Pete Jansen – Sauereisen Technical Service Manager. This activity would permit the contractor's employees to familiarize themselves with the materials and any idiosyncrasies particular to spraying fiber-filled material through a 50:1 airless pump. Also, it would enable Sauereisen to approve acceptable surface preparation methods and make recommendations for any improvements they thought would assist in making the project more successful. Furthermore, once the 10 by 10 area(s) were completed, all parties (Sauereisen, Solhydroc, Resolute, & MBI Corexcel) could agree upon how the final product would appear throughout the entire 50,000 square feet of surface area and have a comparison to use as a reference whenever Sauereisen and Solhydroc representatives departed from the job site.



Vertical Surfaces - Walls and Weir Areas

The surface preparation selected for the project was high pressure water blasting on the vertical surfaces since the customer has concern for contamination of manufacturing process if sand blasting was used [2].

The horizontal floor surfaces were scarified with a scabbler machine and this procedure was followed by recirculating sandblast with containment of sand and debris by vacuum disposal during the operation [3].

After the vertical wall area was permitted to dry overnight, the area was repaired with epoxy mortar by hand trowelling the with a rubber squeegee [3].

The epoxy repair mortar is specifically formulated to bond to rough concrete surfaces with the ability to fill imperfections and bug holes without sagging or outgassing. Not only does the concrete surface get refinished to an acceptable surface for application of the lining; but, the epoxy concrete repair material does not require a primer and offers a 72- hour recoat time for coordination of your lining or coating application. [4].

The following day, airless spray training was conducted with MBI Corexcel employees and the 10 ft. by 10 ft. wall area was sprayed with the specified 40-mil thickness of Sauereisen Fibercrete No 218. The thickness was controlled by gaging areas during application and calculating material usage compared to the area covered. Photo number [5] shows Pete Jansen instructing MBI Corexcel employees on proper spray techniques for the fiber-filled material, prepared surface area, and inset depicting the condition of the wall area prior to the application.

The Fibercrete Epoxy Novolak 218 is a 100% solids lining system that incorporates an inter-locking fiber matrix which provides outstanding flexural and tensile strengths. The selected resin/hardener system with fiber addition also enhances the material for applications to protect against sliding abrasion from particulate solids in gaseous or liquid environments.

Horizontal Surfaces – Floor Area

The floor area provided even more unique challenges than the vertical surfaces. Not only was there deteriorated concrete, prior coating, and laitance to be removed; but there were many deep gouges & depressions in the concrete from solids abrasion and damage from the sludge- removal clarifier rake arm that had to be repaired [6].

Compounding the situation was that there was not enough time to utilize abrasive water blast preparation method and finish work in allotted construction period.

It was decided that the floor areas could be prepared with a scabbler machine followed by a walk-behind sandblast that would not interfere or contaminate other procedures that were ongoing in the clarifier at the time [7]. This enabled surface preparation on both the walls and the floor areas to be done concurrently or as required to meet project demands and other scheduled ongoing work [8].

Due to the expanse of the floor area, degree of established slopes, and amount of damage deeper than ½ to1/ inch in some areas, a pour & spread epoxy repair material was selected to rehabilitate and resurface the floors. The epoxy pour & spread material was squeegeed to the prepared surfaces and then an additional broadcast of sand to excess was applied into the pour & spread repair material [9].

After the epoxy pour & spread sand mixture was allowed to cure overnight, the excess sand was swept from the surface and collected for use on the adjacent area on the other side of the rake arms [10].

The pour & spread broadcast repair system provided a more durable basecoat and the sandpaper-like surface profile recommended by the manufacturer to ensure adhesion and minimal outgassing of the epoxy lining system that would be sprayed upon it [11].

The procedure was duplicated on the adjacent side of the clarifier floor prior to setting up spray rig for the horizontal application of the fiber-filled Novolak lining. Both of the repaired areas were sprayed with 40 mils of the fiber-reinforced lining. After appropriate cure of material, the clarifier was rotated 180 degrees and rake arms were rested upon the finished floor areas. By scheduling the work in opposite segments as described above construction activity was maintained on a 10-hour per day, 2-shift, seven-day schedule to enable total rehabilitation of the entire 50,000 square feet in allotted time scheduled.

Sauereisen, Inc is a third generation owned manufacturer of both Inorganic and Organic corrosion-resistant materials of construction located in Pittsburgh, PA USA. With over 100 years of experience, Sauereisen, Inc. has shipped their materials throughout the world. When faced with your next project give Sauereisen a call and receive a recommendation for an “Engineered Solution”

About The Author:

Gregory M. Severyn is a 27 veteran of Sauereisen currently acting as Business Development Manager. Greg has been instrumental in collaborating on corrosion control projects throughout the world as well as expanding Sauereisen’s market share of sulfur and specialty ceramic cements. You can contact him at gmseveryn@sauereisen.com or 412-963-0303 ext. 229.