The Outcome

Despite material chain disruptions and labor shortages, CCS and LATICRETE were able to manage these impacts, and completed the L&M EMERYTOP 400 on time. As the largest transfer station installation to date by LATICRETE and the second new build with Kokolakis Contracting, the new McKay Bay Transfer Station officially opened in February 2022 and is now decades away from any major repairs in the resurfaced area. Thanks to the new tipping floor being double in size, the City can transport 1,800 tons (1,632.9 metric tons) of municipal solid waste (MSW) a day, compared to only 600 (544 metric tons) tons a day previously.

"Environmental stewardship is one of our priorities – as our city continues to flourish, the new Transfer Station ensures that we now have the capacity to maintain an ecological, energy-saving waste stream for years to come. From the integrity of the new floors, which are paramount to the success of the new transfer station, to now being able to accommodate twice as many vehicles as before and vastly improving visitor wait times, I am confident that the new McKay Bay Transfer Station will help transform Tampa's future and the beautification of the city," concluded Larry Washington, Director, Department of Solid Waste and Environmental Program Management for the City of Tampa.

LATICRETE

McKay Bay Waste-to-Energy Complex and Transfer Station

Project Spotlight

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Globally Proven Construction Solutions

McKay Bay Waste-to-Energy Complex and Transfer Station

Rod Voigt – General Contractor, Kokolakis Contracting

Cornerstone Construction Services – Contractor

Jacobs Engineering – Engineer

City of Tampa – Client

The Situation

In the past few years, Tampa's downtown district has doubled in size thanks to the new buildings, skyscrapers and expanded roadways constantly underway to accommodate for the influx of new residents migrating to the area. However, as Tampa's population grows, so does its trash intake. In response to a growing community and increased need for disposal capacity, the City of Tampa became the second U.S. city to own and operate a Waste-to-Energy (WTE) facility after acquiring the Tampa, Florida-Based McKay Bay Plant in 2019. Since the original McKay Bay plant, which encompassed a WTE and two transfer stations, was built in 1985 and only capable of accepting 600 (544 metric tons) a day, the plant needed a more efficient method to manage the city's more than 360,000 tons (326,586 metric tons) of municipal solid waste (MSW) that the citizens generate each year.

Plans to invest in an improved WTE facility and a transfer station would not only enhance the operations and durability of the McKay Bay plant but provide a more environmentally-conscious method to managing the city's waste while ensuring the highest amount of energy is being produced.

The tipping floors of transfer stations are subject to some of the harshest chemical, impact and abrasion conditions one can find and the plant faced numerous operational problems and issues throughout its lifetime. After much consideration, the City determined that the most effective and forward-thinking solution would be to repair the existing transfer station building to be used for other waste and disposal services while planning and designing a brand new transfer station. Additionally, the existing WTE building would also go through extensive repairs. The City of Tampa's development plan for the new McKay Bay plant would replace the existing dump site to encompass a new 54,000-square-foot transfer station featuring a 30,000-square-foot (2,787 m^2) tipping floor. This alone would greatly benefit the City, double the plant's capacity and decrease visitor wait times.

With a reputation for successfully completing many waste transfer stations, Rod Voigt with Kokolakis Contracting was tapped to be the general contractor for the job and spearhead the construction for the new transfer station. Thanks to his extensive background, Voigt knew that a project of this magnitude requires a team with reputable experience and products to meet the high requirements. To meet these demands and ensure that the new McKay Bay plant could effectively and efficiently work at full capacity without impairment for years to come, he needed a key group of partners to work with. Enter Cornerstone Construction Services (CCS), who was contracted to repair the old transfer station floor, the WTE tipping floor as well as install the brand new transfer station's tipping floor using LATICRETE® products.

The Challenges

- ***Unprecedented Circumstances:*** The team's main challenge was the responsibility of having to complete the restoration and new construction of the McKay Bay plant in the middle of the COVID-19 pandemic. This resulted in a tremendous amount of obstacles from material supply chain disruptions, to labor shortages and heightened safety protocols that the team was able to overcome.

- ***Unforeseen Conditions:*** After the City of Tampa purchased the McKay Bay WTE, it was obvious that the previous floor maintenance on both buildings throughout the past almost 40 years was minimal, requiring the team to prepare and execute two different repair plans. For starters, there were multiple areas in the existing transfer station that required several inches of infill due to deep depressions before the teams could proceed. Likewise, the tipping floor at the WTE facility was in such bad shape and because of its unique set of considerations, the only viable option would be a full tear out of the existing structural slab. Because of these circumstances, major surface preparation would be needed to ensure this project could withstand the intense use without risk of constant servicing.

- ***Community Impact:*** McKay Bay disposed of more than 310,000 tons (281,227.3 metric tons) of waste and generated enough electricity to power nearly 15,000 residences during fiscal year 2019 alone, meaning a long-lead time for this project would severely impact not only the business but the community as a whole. A high-strength topping system, specifically with a quick return-to-service, was vital for the plant to operate at normal capacity.

> From the physical conditions we were dealing with to the project being taken place in a pandemic, many said this project would be impossible. However, this ended up being the most seamless repair in all of the transfer station projects I have managed.
>
> Chris Eckert –
> McKay Bay WTE Plant Facility Manager

A LATICRETE Solution

"Tipping Floors endure some of the harshest conditions one can imagine for any floor. L&M™ EMERYTOP 400™, the world's toughest floor, has proven its ROI for several neighboring counties in Florida for over 10 years and we couldn't be prouder to be part of the team to bring this solution to the City of Tampa," said Alejandro Luna, LATICRETE Technical Sales Representative for southern Florida. "This product would extend the life cycle of the tipping-floors, save the City of Tampa costs associated with downtime, rerouting trucks, demolition and repair."

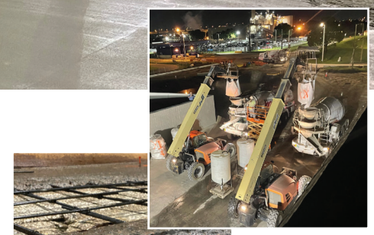
With plans to tackle the restoration of the existing transfer station and WTE first, the CCS team hit the ground running. Once the mechanical surface preparations were completed, the deep depressions were prefilled so the 1,700-square-foot (157 m^2) floor was closer to level, the CCS crew applied L&M EVERBOND™ to bond the soon-to-be-placed one-inch (2.5 cm) monolithic cap of L&M EMERYTOP 400 floor topping to the existing prepped substrate.

L&M EMERYTOP 400 is the best choice for any floor subject to leachate, heavy point loads, high-impact loads and extreme abrasion, and is ideal for the McKay Bay Transfer Stations. This non-metallic, non-rusting topping is effective indoors and outdoors and is chemically engineered to combat chemical attacks — which is when toxic substances destroy the cement paste holding the aggregate in place. These leachates can include milk, vinegar, urine, animal fat and most household chemicals – which are prominent in all solid waste spaces.

Once the topping was applied, L&M E-CON™ was used to help the finishing of the L&M EMERYTOP 400. Lastly, after water curing, the team applied L&M DRESS & SEAL WB 30™, a water-based, low VOC, high solids acrylic copolymer solution that cures and seals the topping. The tough film locks in moisture, curing the concrete for maximum hardness. This clear, fast-drying sprayable liquid is highly effective on both interior and exterior surfaces, adheres well to concrete surfaces and has excellent barrier properties.

Next was the tear out of the existing WTE tipping floor. Once the structural slab of the 2,500-square-foot (232 m^2) area was removed, CCS employed a 10-inch structural slab with a double mat rebar followed by a two-inch (5.1 cm) monolithic cap of L&M EMERYTOP 400, followed by L&M E-CON and L&M DRESS & SEAL WB 30.

Construction on the new transfer station commenced following the installation and repair of the existing buildings. Kokolakis Contracting teamed up with Jacobs Engineering and CCS to install the approximately 30,000-square-foot (2,787 m^2) tipping floor, much like the previous WTE install, a two-inch (5.1 cm) monolithic cap of L&M EMERYTOP 400 was applied, followed by L&M E-CON and L&M DRESS & SEAL WB 30.



"From the physical conditions we were dealing with to the project being taken place in a pandemic, many said this project would be impossible. However, this ended up being the most seamless repair in all of the transfer station projects I have managed," said Chris Eckert, the Plant Facility Manager at McKay Bay WTE.