Fiberglass Coating Process Replacement

Overview

The major problem with the existing process is time. It takes approximately 30 minutes for each layer of epoxy or wax to cure (become tacky) before moving to the next step. This process of fiberglass and epoxy is used not only for the concrete molds, but also the deck. Therefore, when coating the deck, the curing process must be complete (approximately 1 hour) before moving to the next step.

Objectives

The team’s objective was to research and test new materials for concrete precast molds, as well as, analyze those materials on cost, cure/working time, and overall surface finish.

Approach

- Researched not only the current materials and processes, but also materials and processes other companies have used to precast concrete
- The final materials that were to be tested were: heat shrink plastic, brush on rubber, brush on plastic, and Versaflex industrial coating
- 3 total boxes were constructed out of the same plywood High Concrete uses in its manufacturing. Each panel of the boxes were coated with a different material
- The 4 sides of the first and second boxes consisted of heat shrink plastic, brush on rubber, brush on plastic, and fiberglass for reference
- The concrete was poured and analyzed for surface finish
- On concluding that brush on plastic was the best finish, a third box was made. Its 4 sides consisted of 2 brush on plastic sides, and 2 Versaflex sides. This box reflected the two best options moving forward for High Concrete’s problem.

Outcomes

- The outcome of the final pours concluded that the best surface finish would be from the brush on plastic, this was due to the plastics ability to be sanded very smooth
- The Versaflex showed areas of unevenness as well as the overall feel of the surface itself
- Taking cost per square foot, time of application/curing, and surface finish into account, the High Concrete Team believes brush on plastic is the best alternative to the existing fiberglass method.

Figure 4. Cost comparison of material cost per sq ft and labor cost

Figure 5. Time comparison of application time and curing time in minutes