

Plant Uses Acid-Proof Paving to Preserve Concrete Floors, Vessels


LOCATION

Martin, South Carolina


COMPLETION

1978


OPERATION

Coloring agent production


PRODUCTS

FURALAC™ Green Panel Mortar
 FLEXJOINT™ Joint Filler
 PENNCOAT™ 101 Membrane
 Acid-resistant Brick Pavers

Challenge: Provide protection from corrosion and expansion/contraction of flooring and process vessels

Solution: Flooring and vessel lining system using PENNCOAT 101 Membrane, FURALAC Green Panel Mortar as bedding adhesive and FLEXJOINT Joint Filler for brick paver side joints

Sandoz Color & Chemicals, a leading supplier of quality coloring agents to the U.S. textile industry, wanted long-term protection for the concrete floors and waste disposal system when their first dye manufacturing facility was built in the United States at Martin, S.C. The Swiss-based company uses a variety of strong acids and caustic reagents to process dyestuffs, so they specified a durable corrosion-resistant flooring that could handle heavy traffic in the production areas. Protective linings were also needed for drain trenches, collection sumps and containment vessels in the waste treatment system. Approximately 25,000 sq ft of concrete sub-base had to be protected from chemical attack.

The floor of the production area, designed to handle 200-psi loads, consists of a poured concrete base accurately leveled to a maximum deviation from grade of 1/8 inch. After etching with acid, the concrete was coated with a 1/8 inch thick layer of a 3-component adhesive membrane (FURALAC Green Panel Mortar) that forms a strong resilient bond for the 2¼ inch thick red shale brick pavers. The bricks were set in place by the bricklayers method where each brick was buttered on the two leading edges and an acid-resistant, furan-resin mortar and then tapped into place to produce very tight joints only 1/8 inch wide. The brick flooring was extended to a height of 8 inch at all walls and equipment foundations and sealed at the top with a filler to prevent seepage down and under the acid-resistant flooring.

Flooring cracks, that are caused by shrinkage and thermal changes of the concrete, are localized and controlled by sawing

1½ inch deep slots in the concrete based about every 20 feet. The bricks were laid with their expansion joints spaced to coincide with these slots. The joints in both the concrete and brick were filled at the same time with a 2-component resin/hardener filler (FLEXJOINT Joint Filler). The chemical-resistant filler has high bond strength and remains flexible and resilient to provide good traffic bearing characteristics.

High floor loading was not a factor in the trenches, pump station, manholes and a 12 x 20 x 14 foot deep open pit vessel in the waste treatment system. The concrete in these areas was primed with an asphaltic primer and covered with a 3/8 inch thick monolithic film composed of hot melt oxidized and fluxed asphalt (PENNCOAT 101 Membrane) reinforced with a single ply of asphalt-impregnated glass cloth. A 3¾ inch thick brick was used for the large waste containment vessel, manhole covers and sides of the trenches, and the heavy-duty 2¼ inch brick was used for the trench floor. The acid-resistant mortar served as both the bed and side joints for the vertical fiber acid brick pavers.

The new dyestuffs manufacturing plant was placed in operation in the fall of 1978, and the flooring was described as “still in perfect condition” several years later. The plant was designed for future expansion so the flooring contractor brought the asphalt membrane over the top of the trenches and onto the edges of the unfinished concrete floor. This assured that the monolithic acid-resistant membrane system would be maintained when the floors were extended for additional production facilities.

