



Pulp & Paper Mill 1992 Industrial Wastewater

Manufacturer:

Raven Lining Systems
13105 E. 61st Street,
Suite A
Broken Arrow, OK 74012
(918) 615-0020

Date of Project:

1992

Product(s):

[Raven 405](#)

Type of Structure(s):

Concrete collection system

Condition of Structure(s):

Highly corroded from hydrogen sulfide gas

Description of Application:

Extremely corrosive and high temperature industrial wastewater from a large pulp and paper manufacturing plant was aggressively corroding the plant's concrete based collection system. Concrete collection boxes and manholes in the system, previously rehabilitated with sulfide resistant calcium aluminate cementitious shotcretes, and had quickly failed in the harsh environment. Over 25 million gallons of pulp plant wastewater with an average temperature of 120°F and high concentrations of hydrogen sulfide gas flows through the system daily. Accelerated deterioration indicated a need for overall system rehabilitation, or the entire system could experience complete structural failure from the aggressive corrosion. The initial rehabilitation was completed in 1992 by CIPP sock lining the corroded 48" lines and spray applying a 1" sulfide-resistant cementitious product to the manholes and collection boxes. However, by early 1993, the calcium aluminate based cementitious coating had experienced 100% failure (corrosion-induced softening, sloughing-off and debonding) in all 20 structures, due to acid attack.

Because of its superior chemical and abrasion resistance, Raven 405 ultra-high build epoxy was chosen to be applied to all structures previously coated with calcium aluminate cementitious product. High pressure water blasting was utilized to remove the failed cementitious product. A new layer of cementitious coating was applied to fill up to 2" voids in the structure and 24 hours later a 100 mil coat of Raven 405 was applied in a single application. This base coat was topcoated the following day with another 50 mils of Raven 405 to further ensure against corrosion intrusion. The system was returned to service 24 hours later.



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These Raven 405 coated structures have been in service since early 1993 and are exhibiting no signs of corrosion or accelerated wear. To date the owner is pleased with the excellent chemical resistance and overall high performance of Raven 405 in the corroded vessels where all previous repair systems failed, and continues to specify Raven products.