

# Refinery Sump Repairs

BELLE CHASSE, LA  
SUBMITTED BY STRUCTURAL

When a refinery's sump was deemed unrepairable, our team was asked to evaluate the structural integrity of the sump and develop a safe repair plan. The scope of the restoration consisted of roof replacement and the repair of an exposed wall section inside the 20 ft (6 m) x 20 ft (6 m) x 20 ft (6 m) in-ground sump. The original contractor had removed a section of the roof to begin the initial repair plan only to discover that the concrete walls were extremely deteriorated



and much of the original reinforcing was corroded, and in some places, non-existent.

A structural assessment of the sump pit was performed and a repair plan developed to bring the sump pit back to an as-designed state. The cause of the sump deterioration was chemical attack of the cement paste due to a deteriorated chemical lining system and embedded metal corrosion. It was determined that the sump in its current condition



would not support crane weight and a cave-in was likely if the sump was not structurally repaired.

New structural walls were constructed and a stay-in-place shoring system was incorporated utilizing vertically-installed soldier beams along the sump walls that were permanently embedded in the repair. The new structural walls consisted of two mats of reinforcing that were welded to the middle of the soldier beams. By utilizing a rapid curing specialty concrete mix, a 5-layer corrosion resistant coating system was applied to the sump within 48 hours.

Once the new structural walls were completed, two steel I-beams coated with a corrosion protection system were installed. An engineered formwork system was utilized for the new 12 in (305 mm) thick roof which consisted of 13 penetrations. Once the concrete was installed, a 5-layer corrosion resistant coating system was applied to the soffit of the roof.

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SUBMITTED BY  
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