



CASE STUDY



Why repair concrete ?

There are various techniques available for repair and rehabilitation of concrete structure for failure and defects in concrete. Concrete is the most widely used and versatile construction material possessing several advantages over steel and other construction materials. However very often one come across with some defects in concrete. The defects may manifest themselves in the form of cracks, spalling of concrete and exposure of reinforcement. On many occasions, corrosion of reinforcement may trigger off cracking and spalling of concrete, coupled with deterioration in the strength of the structure. Such situations call for repairs of affected zones and sometimes for the replacement of the entire structure.

Project Details

Modern Steel Mills LLC (Oman)

Concrete Repair : Cooling Tower Tanks

Client : Modern Steel Mills LLC

Contractor: Abu Anas LLC

Consultant : Semac Consultants Pvt Ltd

**Product : Fosroc – Repair and Protective
range of products.**

Concrete Repair / Protection



Concrete Repair - Establish cause and solution

This case study is for a concrete repair project – Modern Steel Mills LLC in Muscat – Oman we successfully executed . Modern Steel Mills L.L.C are a prominent manufacturer of Serrated Bars, Re-bars, Steel Billets, Steel Flat Bars, and more in Oman. The maintenance department of the company raised the issues of concrete spalling, exposure and high corrosion of reinforcement.

A correct diagnosis establishing the cause, nature and extent of damage, and the weakness or deterioration caused in the structure is very essential, since a faulty diagnosis may lead to improper selection of materials and repair techniques leading to the failure of the repaired zone again. The company appointed Semac Consultants Pvt Ltd as their structural consultant to address the issue.



Semac Consultants Pvt Ltd is one of the leading engineering design, design-build, and project management consultancy service providers in Oman. Semac Consultancy carried out an extensive diagnostic on the affected concrete structure at Modern Steel and prepared a report which included repair material recommendation and methodology of concrete repair.



A range of advanced solutions, far beyond the simple concrete patch, was utilized to implement an effective concrete repair program. The first phase of the repair program was the cooling tower tanks. The extend of corrosion in the tanks were high, spalling had caused exposure of the reinforcement in many areas. The extend of corrosion on the tank roof slab was beyond repair and decision to demolish it and re-construct it was taken.

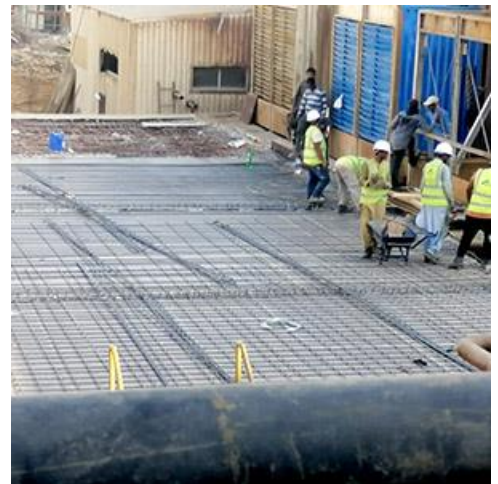


Steps for Repair

Steps involved in repair and protection of the concrete was carried out as per accordance with the project requirement and recommendation by the consultant.

- All loose concrete was removed.
- Corroded reinforcement was exposed.
- Areas where the steel was badly corroded new reinforcement were installed with chemical anchoring – Fosroc Lokfix DUR.
- All the exposed steel was treated with a zinc rich primer – Fosroc – Nitoprime Zincrich.
- Concrete repairs were carried out with Fosroc - Rendroc LAXtra and Rendroc HSXtra repair mortars.
- Resin injection in tanks were required – Fosroc Nitofil EPLV
- Epoxy bonding agent was used to enhance the bond between the old and new concrete Fosroc – Nitobond EP.
- The cooling tower water tank was protected with Fosroc – Nitocote EPS and the drinking water tank with Fosroc – Nitocote E405.

Roof Slab Repair





Photos of Concrete Repair from site





Photos of Concrete Repair from site





Photos of Resin Injection in tanks



Carbonation, movement or poor construction can cause dangerous cracks in concrete structures, leading to the appearance of leaks and water penetration. Resin injection is designed to inject and seal the cracks that appear in reinforced concrete.



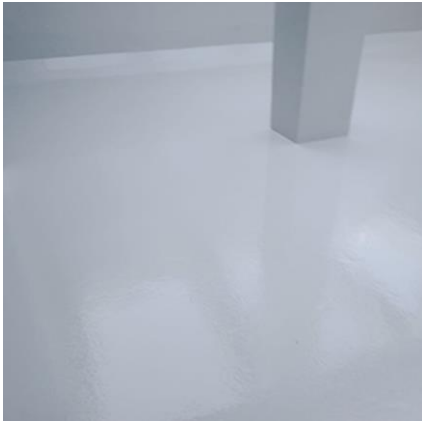


Photos Tank Coating from site





Photos Tank Coating from site





The technique to be adopted for repair or restoration of the structure depends on the cause, extent and nature of damage, the function and importance of the structure, availability of materials and facilities for carrying out repair, and a thorough knowledge of the long-term behaviour of the materials used for the repair work. We at Abu Anas LLC provide the answer for solving many structural problems of ageing bunds, concrete floors and other concrete structures.

Focused on the protection and restoration of concrete, Abu Anas LLC eliminates the cause of further deterioration and creates permanent restoration results.

Abu Anas LLC is specialized in flooring, Waterproofing, Concrete Repairs, Thermal Insulation, and Decorative flooring application in Oman.

Contact us at www.abuanas.om or mail us at info@abuanas.om, call 00968 91145302

