

Sika at Work

Rehabilitation of RCC Jetty Gopalpur Port, Orissa

A Case Study



Rehabilitation of RCC Jetty

Project

The RCC Jetty at Gopalpur Port, Orissa, with a total length of 445 m is used to unload cargo by barge. The structure consists of piles, RCC beams and a RCC slab. All elements of the structure showed severe distress due to rebar corrosion as a consequence of chloride ingress up to and beyond the depth of the steel rebars. The same was further facilitated by a moderately dense concrete, an abundant number of concreting joints and no proper maintenance since the commissioning of the structure.

Project Requirements

The structural safety of the structure was no longer fully assured due to the corrosion related loss of effective rebar cross section. The rehabilitation project had to insure that the structural safety of the entire structure is restored and that the structure is well protected against the aggressive sea water environment for the next life cycle. The rough sea, a tight three month timeframe for execution of works and the fact that the Jetty was in normal use during the works caused additional challenges.

Sika Solution

After an in-depth inspection and assessment of the structure Sika proposed to the owner, Gopalpur Port Limited, an integral rehabilitation solution consisting of the following steps:

1. Initial condition survey; non destructive testing and visual inspection by IIT Chennai, Department of Oceanography;
2. Surface preparation to remove of all loose / unsound concrete;
3. Replacement of excessively corroded rebars; **Sika Refix** anchoring mortar;
4. Application of protective coating on the rebars; **Sika Friezinc R**, a zinc rich epoxy coating;
5. Drilling of core holes through the top slab to serve as inlet / outlet points for the micro-concrete;
6. Installation of watertight shuttering from the underside with the help of the hanging platform;
7. Placement of micro-concrete using positive displacement pumps; **SikaRep Microcrete-3 UW**, suitable for wet / moist conditions, admixed with **Sika Ferrogard-901**, a corrosion inhibitor;
8. Application of full surface protective coating; **Inertol Poxitar**, a heavy duty protective coating;

1.) Initial Condition Survey



Full view of underside of Jetty



Detailed view of underside of Jetty

2.) Surface Preparation



Installation of a temporary hanging truss as working platform to access the underside of the jetty.



Removal of loose concrete using a chisel ...



... and a power driven chisel hammer.



Sandblasting operation in progress.

3.) Replacement of corroded rebars



Drilling of holes to fix additional stirrups

4.) Application of protective coating



Protective coating applied on rebars

5.) Drilling of core holes



Holes to fill in micro-concrete from the topside

6.) Installation of shuttering



Part-shuttering for the beam installed

7.) Application Micro-Concrete



Detail refurbished slab

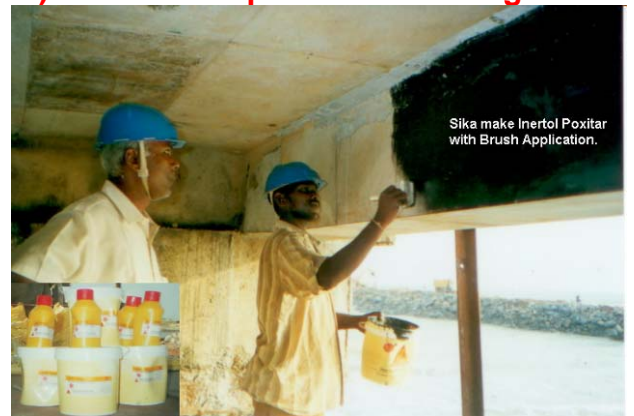


Detail refurbished beam



Detail refurbished pile cap

8.) Full surface protective coating



Application of full surface protective coating



Sika India Pvt. Ltd.

302, Interface Building Nr. 16

Off Link Road, Malad (W), Mumbai – 400 064

Phone: +91 22 4038 4038

Fax: +91 22 4038 4039

info@in.sika.com

www.sika.in