

Control of Corrosion on Underground Piles

Vikas Yadav

Branch: Civil

Roll no.: 19634

Date of Submission: 21-06-2020

Date of Acceptance: 07-07-2020

ABSTRACT: Structures that are used for the transfer of loads from the superstructure to the sub surface strata are known as Foundation. And Piles are a type of foundation. For a hydraulic structure such as bridges, dams, etc. or for surfaces having high water content, the piles are driven into the ground and under the water strata. Piles normally used in underwater structures are subjected to corrosion. Corrosion reduces the structures stability and longevity. There is absolutely no method for elimination of corrosion; but corrosion protection measures can be employed for controlling the effects of corrosion. Corrosion protection can be done in different ways, depending on the environment and other atmospheric and hydrological factors. Types of corrosion protection include – treatment of surfaces, utilization of inhibitors, use of coatings and sealants, cathodic and anodic protection.

KEYWORD: Stability, Longevity, Protection Measures, Types of Protection, Pile Foundation, Coating, Fiber Reinforced Polymer, Corrosion.

I. INTRODUCTION:

Corrosion is the deformation of metals and alloys by the chemical reaction with the environment. During corrosion the metals are converted to metallic compounds at the surface and these compounds vary in dry and wet condition, high temperature/high humidity can lead to rapid deterioration that necessitate costly repairs. The high concentration of chloride ion in seawater allows it to penetrate to the level of steel even in high-quality concrete. Corrosion and in particular corrosion of metal structures, is a problem that must regularly be addressed in a wide variety of areas, for example, in the automotive industry, metal parts are often plated or coated to protect them from road salt and moisture in hopes of increasing their longevity.

II. METHODOLOGY:

It has been observed that either due to conventional methods or methods not adhering to the design concepts of resist corrosion, corrosion causes considerable damage. So, the aspect of corrosion has to be taken into consideration in the under-construction piles.

Phase 1 Planning stage for a corrosion management program to take place. It initiates the program to be implemented on structures that are found to be under the threat of corrosion. For the planning stage, three main requirements are sought, namely the strategy, budget and schedule needed to overcome the problem raised from corrosion of reinforcement.

Phase 2 of the program involves physical assessment and actual remediation. Inspections for severity of corrosion are conducted in this phase to determine what strategy or methods are most suitable to be applied. Development of corrosion control strategy would present more options to the management program.

Phase 3 of the program mainly deals with future monitoring of the repaired structure. Currently and historically, most of the corrosion control programs are driven by response to incident or urgent need, rather than systematically identifying and managing the existing resources.

In the methodology part, it is important to mention about to resist corrosion in the underground piles.

- ❖ Protective Coatings for Underwater Piles.
- ❖ Inorganic Zinc Silicates Primers.
- ❖ High Build Epoxy Coatings.
- ❖ Aliphatic Polyurethane Topcoats.
- ❖ Zinc Rich Epoxy Primers.
- ❖ Non-Skid Deck Coatings.
- ❖ Cathodic Protection of Underwater Piles

III. CONCLUSION:

Though there is no absolute way to eliminate all corrosion on under water piles, there are some effective measures to control them. The



cathodic protection is found to be quite simple to employ and mostly used in marine conditions. The protective coatings are used in vast and expensive structures. The FRP composites have many advantages over conventional methods such that they are light weight, possess high strength and chemical resistance and moreover have incomparable flexibility.



**International Journal of Advances in
Engineering and Management**

ISSN: 2395-5252



IJAEM

Volume: 02

Issue: 01

DOI: 10.35629/5252

www.ijaem.net

Email id: ijaem.paper@gmail.com