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Epoxy Coating on TMT bars

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ABSTRACT: Fusion bonded epoxy coated rebar's has been in use in India and other countries for over 40 years to protect the corrosion led damage of RCC structures .Structures that are exposed to extreme weathers,Particularly coastal structures exposure to salinity are in immense risk of rebar corrosion .Durability of these structures can be improved with the consequent reduction in life cycle.If it is used instead of conventional still reverse with minimal additional cost to this report views the silent features of using including its past performance and construction challenges.Magnifying tests have been conducted at to compare bond performance in fragile members as well as bond performance under Direct pull out of locality produced epoxy coated rebar user with local construction materials. Improper handling and uncontrolled filled fabrication may causes damages to coating and may lead to counter productive results with special care and adequate provision for handling transporting and fabrication in place the use of will be beneficial for structures that are particularly one rebars to early deterioration due to corrosion of rebars

I. INTRODUCTION

The corrosion of steel rebar embedded in concrete is one of the major causes of premature deterioration of concrete structures .The corrosion process is aggravated under aggressive exposure conditions particularly with moist condition and presence of Early deterioration of concrete structures could lead to serviceability ,durability concerns.Were associated repairs and maintenance would bring the life cycle cost issue of the structure in forefront of various methods of controlling the corrosion problem have been practised as industry standards these include cathodic protection use of admixtures silica ,fume , fly ash , slag and latex in .

Various surface treatments option of the rivers and use of surface coating on the concrete details of these options are available elsewhere the particular surface treatment by application of fusion bonded epoxy coating country bars will be four of this paper the effectiveness and durability of fusion bonded epoxy coating on steel reinforcement in corrosion prevention has undergone measure research in past few decades the corrosion of steel reinforcement in concrete by instruction of chloride sulphate and several deteriorates structures service ability durability and safety in contrast epoxy coating acts as a physical and electrochemical better inhibiting the corrosion reaction on the steel surface recent studies have shown corrosion rates of epoxy coated steel three bars to be 40-50 times less than that of unquoted bars Bangladesh construction industry faces the durability concern of concrete infrastructures particularly in coastal region due to adverse environmental condition where enforcement structures particularly of prime may become a viable solution of combatting erosion related durability problem.

Objectives-

The main objectives of this project works are as follows:

- 1.To develop a coating system that can be performed quickly and economically.
- 2.To determine the effectiveness of organic coating rebars
3. To define proper installation FBE coating on TMT bars

II. METHODOLOGY

Methods of research work and the research process:

- Studied application process of epoxy coating TMT bars.
- Determined the material specifications for these bars.
- Executed model making procedure step by step.
- Comparison of epoxy and non epoxy coated TMT bars.
- Checked the results of both.
- Defined final conclusion of the epoxy coating TMT bars



Fig 1-Making of coating procedure on TMT bars

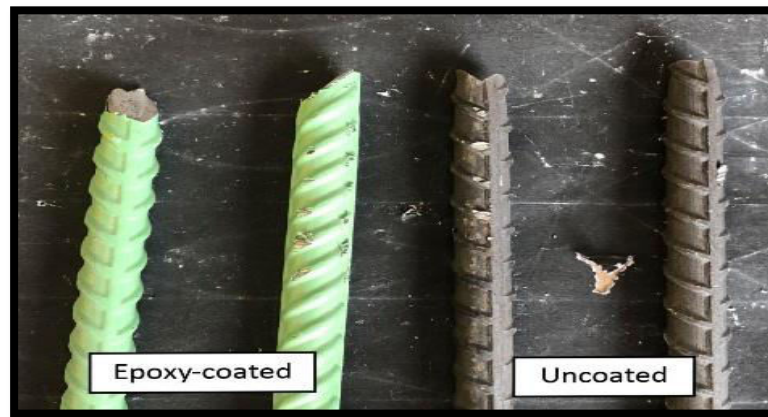


Fig.2-distinguish between epoxy coated and uncoated bars

III. LITERATURE REVIEW

1. ResearchGate(March 2017)

The author states that, Bonding of coating with the steel is very strong as FBE has very good adhesive properties. FBE coated reinforcement bars provide the most effective corrosion protection to the reinforcement bars. The resin used in fusion bonded epoxy-coating is an epoxy permanently, hardness,,gouge, resistance etcand other characteristics are controlled by these components .The molten powder becomes a solid coating within few seconds after coating application.)

2. IRJET(May -2017)

(the author states that Corrosion may affect residual capacity through several mechanisms including loss of bar section, loss of concrete section as a result in longitudinal cracking. Concrete structures in aggressive environment marine industrial area are subjected attack in order to protect the concrete structures from chloral attack in aggressive environment. Epic epoxy is an anti corrosive coating for variety industrial application it is versatile air drink 2 packs depot system that ensures great finish and lasting protection to your industrial structures and components.)

3. VERSITA(15August 2012)

Reported the experimental investigation on 36 beams splice with quoted coated and non coated bars splice varying casting position bar size and anti-bleeding agent in concrete
Epoxy coated bars are used since 1980 into enforcement concrete construction to improve the durability of concrete structures

While the corrosion resistance of these bars is good their bond strength is less than that of uncoated bars a great deal of research has been done on studying the effect of coating on the bond strength of epoxy coated bars.)

4. ACI (09-01-2020)

This study investigates the impact of structural performance of increasing the upper limit of epoxy coating splices.

20 beam specimens containing single supplies as well as supplies of bundled bars were tested to failure the experimental parameters were ranges of epoxy coating thickness (460 to 530 mm).

This study investigates the impact on structural performance of increasing the upper limit of executing thickness 2460MM2 with respect to deflections cracking and bundles trend of tensions splices 20 beam specimens containing single supplies as well as supplies of bundled bars.)

5. Transformation Research Record (2019)

Factors that initiate and sustain corrosion of enforcing steel are chloride ions oxygen and water present at the steel concrete interface.

But the mechanical techniques are used to physically prevent the access of oxygen chloride and water to the steal the electrochemical methods used and applied electrical current to either removal colors from the concrete.

To valuate a consistency of standard a present epoxy coating practices quoted barware obtained in 1980 from 7 different suppliers located in all major geographical region of the contention United States a total of 15 variable including two control blacks still were included in the study.

6. MDPI(2021)

Their enforcement concrete structures are the integral components in the construction industry due to their excellent mechanical properties and formability.

The failure of these rain personal concrete structures is commonly caused by the corrosion of steel reverse reinforcement corrosion of concrete enforcement present the most significant source of deterioration of concrete structures.

Shows driver cola funny microscope is under size distribution for use in the epoxy coating the microscope is shows as spherical morphology with some pores present in the surface additionally the microcapsules are bridal agglomeration is seen the barrier is not observed in suspension nor during the additional to the epoxy coating and application

IV. RESULT & CONCLUSION

1. With respect to other treatments, we analyzed that epoxy coating is economically greater performance than colored and galvanized treatments.
2. With respect to durability of the coating the epoxy stands as middle level in front of galvanized and stainless steel bars.
3. Because the galvanized and stainless steel have higher rates, that's why also it's have durability is high.
4. On an appropriately 5-10% extra with compare to other materials with respect to life cycle.
5. So, finally we states that epoxy coating is best coating material than other materials like galvanized, stainless steel etc.

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