RETROFITTING OF BEAM BY USING MESH WIRE CLADDING

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ABSTRACT

Reinforced concrete structural factors are plant to parade torture, indeed before their service period is over due to several causes. Similar inoperable structures bear immediate attention, enquiry into the cause of torture and suitable remedial measures, so as to bring the structures back to their functional use again. This strengthening and improvement of the performance of similar deficient structural rudiments in a structure or a structure as a total is appertained to as retrofitting. The each-important issue to be addressed in retrofitting is life safety. What can be done to help collapse of the structure and help injury or death to inhabitants? Some build conditions may try to address only the issue of life safety, while admitting that some structural damage may do. Mesh line jacketing wastes are most generally used as retrofitting material these days due to their easy vacuity, frugality, continuity, and their property of being cast to any shape without demanding significant formwork. Mesh line jacketing as a retrofitting material can be enough useful because it can be applied snappily to the face of the damaged element without the demand of any special cling material and also it requires lower professed labour, as compared to other retrofitting results presently being. The mesh line jacketing construction has an edge over the conventional corroborated concrete from the study it's seen that the safe cargo carrying capacity of blockish RC rudiments retrofitted by mesh line jacketing is significantly increased with funk mesh used for retrofitting

Keyword: - *retrofitting, vacuity, frugality.*

1. INTRODUCTION

The shafts are stressed up to a specified limit as below and also retrofitted by applying sword funk mesh and also publishing it with cement mortar up to the consistence of 15 mm for all six shafts. Thus, final sampling of ray with cement laminate will come 150 x 150 x 700 mm. Effect of two different stress situations of 60, and 80 has been studied to see their effect on the strength of retrofitted shafts with funk mesh placing it over the free shells of ray. An imbrication of 3 elevation at the place of joint between line mesh is introduced

Reinforced concrete is one of the most abundantly used construction material, not only in the advanced world, but also in the outermost corridor of the developing world. The RCC structures constructed in the advanced world are frequently plant to parade torture and suffer damage, indeed before their service period is over due to several causes similar as indecorous design, defective construction, change of operation of the structure, change in canons vittles, overfilling, earthquakes, explosion, erosion, wear and tear, deluge, fire etc.

Similar inoperable structures bear immediate attention, enquiry into the cause of torture and suitable remedial measures, so as to bring the structure into its functional use again. In the last many decades several attempts have been made in India and abroad to study these problems and to increase the life of the structures by suitable retrofitting and strengthening ways. Of the colorful retrofitting ways available,

2. DIFFERENT WAYS OF RETROFITTING

1. Column strengthening

- Concrete jacketing
- Sword jacketing
- Fiber corroborated polymer distance wrapping
- Pre-stressed line wrapping

2. Beam strengthening

- Addition of concrete
- Sword plating
- Use of FRP bars
- External-stressing
- FRP wrapping

3. Beam to column common strengthening

- Mesh Wire jacketing
- Sword fillet
- Sword plating
- Sword jacketing
- FRP jacketing

4. Arbor strengthening

- Upper face overlaying construction system
- Lower face overlaying construction system

5. Wall strengthening

6. Foundation strengthening

3. THEORY OF MATERIALS USED

3.1. Cement:

Description: OPC can be defined as the cling material having cohesive & tenacious parcels which makes it able to unite the different construction accoutrements and form the compacted assembly. Ordinary/ Normal Portland cement is one of the most extensively used types of Portland cement. The name Portland cement was given by Joseph Aspdin in 1824 due to its similarity in color and its quality when it hardens like Portland gravestone. Portland gravestone is white slate limestone in islet of Portland, Dorset. Composition of OPC

3.2. natural sand/crush sand

As we all know concrete correspond of sand or crush sand that ought to be of fine quality. As beach is that the natural being material, we have a tendency to took it from swash bed and lake bottom etc. This material/ beach is additional sure to be used in concrete from ancient amount.

The crush beach is that the artificial beach that created by crushing the crystal in tiny pieces/ partials that mechanically act as a beach, currently a day the swash beach is not obtainable thus, the crush beach is employed well in construction. Before victimization the beach/ crush beach the check or done on them for obtaining sensible quality material to be used

3.3. Fine aggregate:

The total having size less the4.75 mm is called as the fine total. The main function of all the material is to make the concrete to make it “workable” which affects the strength of the concrete. It's attained by the crushing the beach in

needed size. It's the instinctively made and helps the coarse total to interlock with each other by defying or not allowing to from the voids

3.4. Coarse aggregate

Coarse aggregate shall correspond of crushed or broken gravestone and be hard, strong, thick, durable, clean or proper gradation and free from skin and coating likely to help proper adhesion of mortar.

3.5. Mesh wire grid

Chicken wire mesh:

It is made up of thin, flexible galvanized steel wire, with hexagonal gaps. Available in 1 inch (about 2.5cm) diameter, 2 inch (about 5cm) and ½ inch ((about 1.3cm), chicken wire is available in various wire gauges usually 19 gauges (about 1mm wire) to 22 gauges (about 0.7mm wire).

In construction, Chicken wire mesh or tackle cloth is used as an essence lath to hold cement or cataplasm, in a process known as stuccoing. Concrete corroborated with funk line or tackle cloth yields Ferro- cement, a verse tail construction material, it can also be used to make the architecture for a papier-Mache form, when relative high strength is demanded.

4. PROCESS OF RETROFITTING

First of all, face of ray is gutted and after cleaning of the face, doubled layers of funk mesh stretched and ravished to three faces on ray with nail & bill for cling between ray and mesh. As shown in Plate.1 after that 15 mm cataplasm in the form of 12 cement mortar (w/ c = 0.4) is applied on three faces of shafts. After this the ray is cured for 28 days. Also, with the same procedure as of Normal ray, testing of shafts is done under two points lading in order to calculate ultimate cargo and corresponding diversions & also compliances of the experimental programmed along with the results and their discussion**.**

5. RESULTS OF TEST

Firstly, Normal shafts are tested up to failure and the data corresponding to it's recorded in table. The value of ultimate weight with divagation of Normal shaft. Cargo on Shafts Beam N1 is98.741 kN at deviation4.910 mm, Beam N2 is72.390 kN at deviation2.930 mm, Beam N3 is79.710 kN at deviation3.0 mm. The safe weight is calculated from the normal of weight data for admissible divagation of 3.5 mm at the weight is83.61 kN.

Also, the retrofitting of the shafts is done with cement mortar of viscosity 9 mm along with doubled layers funk line mesh clicked on three sides for all four shafts. After 28 days of curing the shafts are tested again with the same system as the Normal shaft was tested firstly and the matching results are recorded are shown in Table.

The value of ultimate weight with divagation of Normal shaft. Cargo of Beam R1 is119.94 kN at deviation5.08 mm, Beam R2 is100.140 kN at deviation3.070 mm, Beam R3 is89.010 kN at deviation3.15 mm. The safe weight is calculated from the normal of weight data for admissible divagation of 4 mm at the weight is103.03 kN. The weight divagation angles were idealized as quadric-direct angles.

The results indicate that the shafts retrofitted with funk mesh as underpinning in the Ferro- cement jacket enhanced maximum weight carrying capacity followed by 80 of Normal shafts. The severity rate and weight carrying capacity is topmost in case of shafts retrofitted the increase in severity rate of shafts retrofitted using mesh line jacket having funk mesh are makes the retrofitted shafts suitable for dynamic weight operations.

6. CONCLUSION:

Grounded upon the test results of the experimental study accepted, the following conclusions may be drawn

1. The shafts retrofitted with funk mesh are adding Ultimate cargo carrying capacity when loaded to failure.

2. The failure of the compound is characterized by development of flexural cracks over the pressure zone. The distance of cracks is reduced for retrofitted shafts indicating better distribution of stress.

3. Retrofitting with Chicken mesh of shafts has the loftiest cargo carrying capacity as compared to Normal ray

4. After retrofitting, all the test samples showed large deviation at the ultimate cargo, and also a significant increase in the rigidity rate. As well, making the factors better equipped to repel dynamic loads.

Shafts retrofitted with funk mesh with were the most effective as their cost to strength rate is near about equal to Normal ray

7. REFERANCE

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