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DESIGN AND DEVELOPMENT OF CONCRETE COVER BLOCK

Gavate Pooja, More Poonam , Pagire Sonali, More Amit

"Designation by prof. S. A. Patage"

Civil Department

APCOER, Pune Ind.

Abstract:

Sufficient cover is required for the reinforcement in concrete structures for protection against corrosion. Though several codes of practices have specified minimum cover for various climatic conditions, it is often not maintained in practice. In this paper, the authors contend that the Indian Codal provisions relating to concrete cover have to be revised as they do not account for many factors related to minimum concrete cover. Also, some devices and methods to increase the quality of cover are discussed. The authors also stress that just an increase in concrete cover does not ensure durable structure.

I. INTRODUCTION

The precast concrete product, which is used to provide the necessary covers or spacing for the reinforcement bars from the formwork, in all the RCC structures like slab, beam, column, footing, etc are called concrete cover blocks or concrete spacer blocks. In order to prevent corrosion of the rebar, it needs to be fully embedded in concrete. By code, it usually needs about 2-3 inches of coverage on all sites.

So, the cover block lifts the rebar up by about 2-3 inches & becomes a permeant and integral part of the poured concrete, ensuring that no part of the rebar sags and minimizes that required concrete coverage during the pour. They are available in variety of shapes and sizes as per their specific use.

PROBLEM STATEMENT:

- Concrete cover does not have a structural function its purpose is to prevent damage occurring to the building part.

- It ensure that the concrete encase the steel on all sites so that it is not exposed to the external air.
- If the cover is insufficient the concrete can flake off, the steel is then no longer cover and may corrode.
- The building part is damage fundamentally in long term and this can lead failure.

- For the same depth of concrete section, the increase of concrete cover result in the reduction of the lever arm of internal resisting force.
- The weight of the concrete structure is increased the by an increases concrete cover.
- This effect is a critical factor in the design of floating ships and platforms where self-weight is an important design criterion.

OBJECTIVES

- Maintain a specified distance between the rebars and the shuttering.
- To protect the steel reinforcement bars from environmental effects to prevent their corrosion.
- To provide thermal insulation, which protects the reinforcement bars from fire.
- Provide thermal insulation, which protects the reinforcement bars form the fire.
- Give reinforcing bars sufficient embedding to enable them to be stressed without slipping.
- To make a structure durable and safe.

FUTURE SCOPE

- The cover block can be manufacture with different shapes such as circular, cylindrical etc.

  Cover blocks can be manufactured by replacing the existing constitutes with silica, sand, additives and different admixtures.

(1)

METHODOLOGY

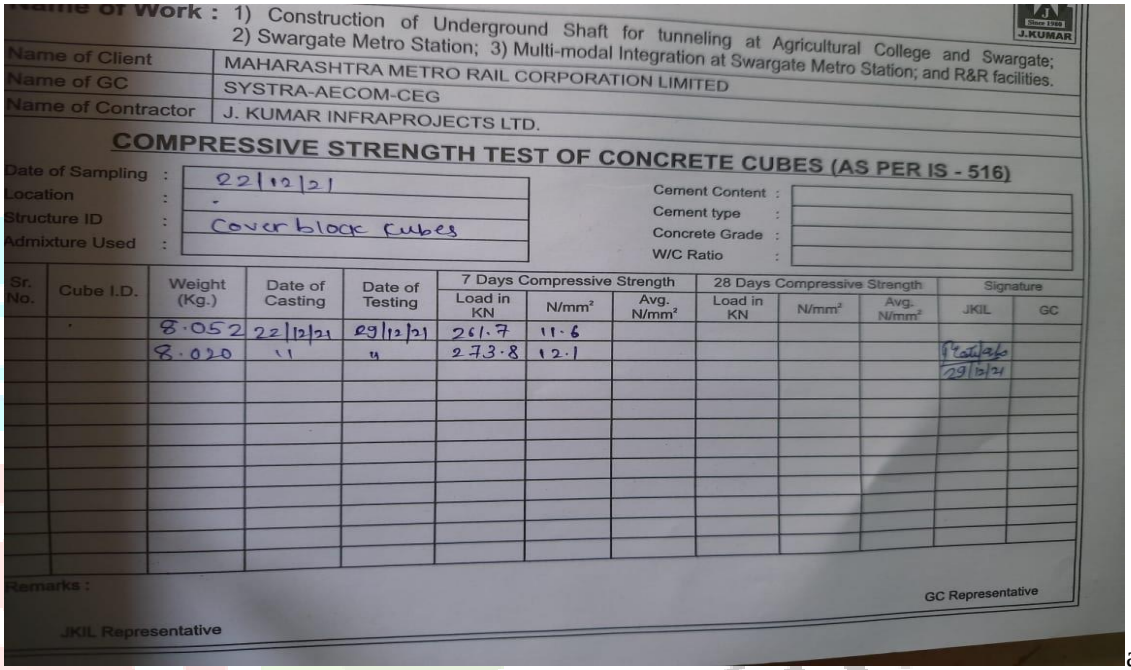
- The For making M35 grade concrete Weight crush sand of 15kg in weighing machine.
- Take cement 5kg.
- Add 15ml admixture in 1ltr water and pour it in mixing.
- Take weight of water 2.25kg on weighing machine and add it in mixture.
- Mixed all material properly without any dryness.
- Take concrete cube mold of size 15 x 15 x 15 and cover blocks silicon mold.
- Apply oil on internal all side of silicon mold.
- Pour the concrete mixture in mold's up to top.
- Place the mold on vibrator machine and start the vibrating.

- Vibrate mould up to 12-15min.
- Leave the moulds for drying for 24hrs.

- Out the concrete block and cover blocks from the molds and place it in water for 7days.
- After 7days place concrete block for testing in CTM. We get the 7days result strength of m35 concrete.
- We get the 7days result strength of M35 concrete.

RESULTS AND DISCUSSION

After the 7days we get the strength of M35 concrete in CTM 12.1N/mm^2



Name of Work : 1) Construction of Underground Shaft for tunneling at Agricultural College and Swargate; 2) Swargate Metro Station; 3) Multi-modal Integration at Swargate Metro Station; and R&R facilities.

Name of Client : MAHARASHTRA METRO RAIL CORPORATION LIMITED
Name of GC : SYSTRA-AECOM-CEG
Name of Contractor : J. KUMAR INFRAPROJECTS LTD.

COMPRESSIVE STRENGTH TEST OF CONCRETE CUBES (AS PER IS - 516)

Date of Sampling : 22/12/21
Location :
Structure ID : Cover block cubes
Admixture Used :

Cement Content :
Cement type :
Concrete Grade :
W/C Ratio :

Sr. No.	Cube I.D.	Weight (Kg.)	Date of Casting	Date of Testing	7 Days Compressive Strength Load in KN	N/mm²	Avg. N/mm²	28 Days Compressive Strength Load in KN	N/mm²	Avg. N/mm²	Signature JKIL	GC
		8.052	22/12/21	29/12/21	261.7	11.6						
		8.020	11	11	273.8	12.1						

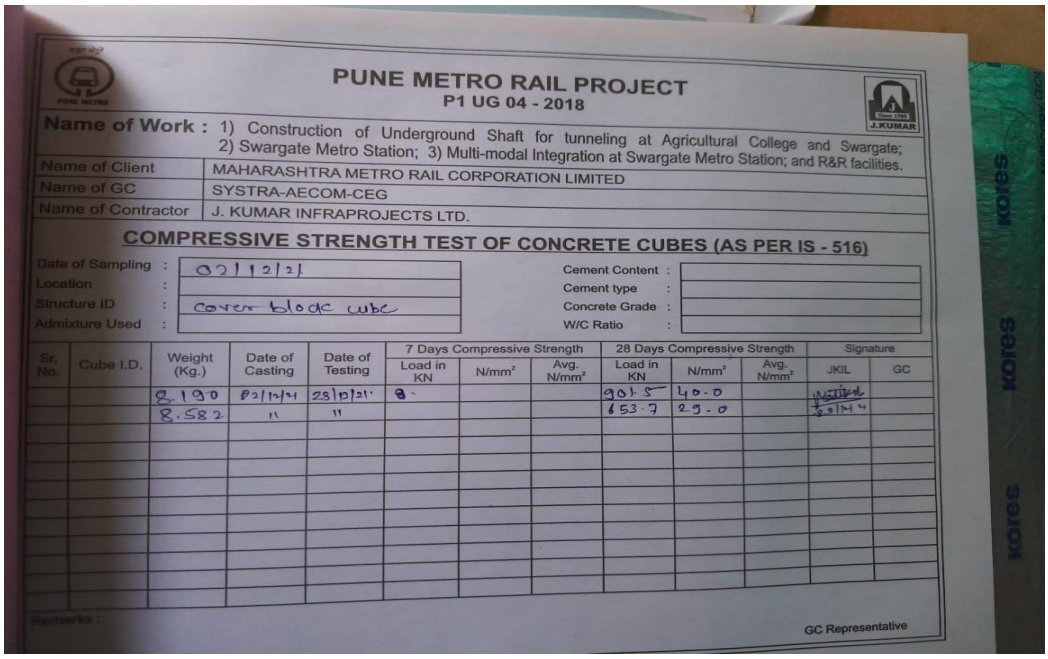
Remarks :

JKIL Representative

GC Representative

ays test result

- After the 28days we get the strength of M35 concrete in CTM 29.0N/mm^2



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Name of GC : SYSTRA-AECOM-CEG
Name of Contractor : J. KUMAR INFRAPROJECTS LTD.

COMPRESSIVE STRENGTH TEST OF CONCRETE CUBES (AS PER IS - 516)

Date of Sampling : 02/12/21
Location :
Structure ID : Cover block cube
Admixture Used :

Cement Content :
Cement type :
Concrete Grade :
W/C Ratio :

Sr. No.	Cube I.D.	Weight (Kg.)	Date of Casting	Date of Testing	7 Days Compressive Strength Load in KN	N/mm²	Avg. N/mm²	28 Days Compressive Strength Load in KN	N/mm²	Avg. N/mm²	Signature JKIL	GC
		8.190	02/12/21	28/12/21				901.5	40.0			
		8.582	11	11				653.7	29.0			

Remarks :

GC Representative

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Nasri V.

larissi Cavalaro

Loughborough University

Jesús Miguel Bairán

Universitat Politècnica de Catalunya