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Modification of Revolutionary Product Cement Canvas Sheet

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Abstract - *Concrete cloth or concrete canvas is the most up-to-date fabric material in construction along worldwide. CC is the flexible material due to this advantage, the use of cc is rapidly extended. The speed of work and price to attract the all civil engineers as supplemented by using production cloth in constructions. This cloth is used for transient motive like canal lining and to prevent the soil erosion in hilly regions and so forth. Life span of cc is 15 to 20 years. In this paper to take a look at the applications and engineering properties of concrete cloth. CC is a ceramic nature has fire resistant and water proof.*

***Key Words*: modified concrete cloth, wire mesh, concrete mix, Polypropylene fibre, gunny bag, M sand**

1. INTRODUCTION

Concrete Canvas is an upcoming revolution in civil world, which in turn have a wide range of application in rapid. Construction in state of emergency etc. Due to it's own physical property namely flexible and easy to use. They are cement impregnated fabric that hardens when hydrated to form a thin, durable, water and fire proof concrete layer. This evolution may lead to a new way of construction without the use of the mixing equipment. Thus it make construction mush more easily in just two steps placing them in passion by adding water. They have faster development around the world due to the significantly quicker and economical comparatively.

1.1 What Is Cement Canvas ?

Finally, complete content and organizational editing before formatting. Please take note of the following items when proofreading spelling and grammar: Concrete Canvas is a flexible, concrete impregnated fabric that hardens when hydrated to form a thin, durable, water proof and fire resistant concrete layer. CC allows concrete construction without the need for plant or mixing equipment. Simply position the Canvas and just add water.

Concrete Canvas consists of a 3- dimensional fiber matrix containing a specially formulated dry Concrete mix. A PVC backing on one surface is to prevent it, to be attacked by moisture or water from surrounding, makes it water proof. On the other side of the Canvas is aided with a hydrophilic fiber (polyethylene and polypropylene yarns) thus forms hydration is done by drawing water into the mixture.

The Canvas may be hydrated either by spraying or by being fully immersed in water. They can be easily nailed, stapled or coated with an adhesive for easy attachment to other surface. Once set, the fiber reinforce the concrete, preventing crack propagation & providing a safe plastic failure mode. Compared to traditional concrete solutions, it is faster, easier and, more cost effective to install and has the additional benefit of reducing the environmental impact of concreting works by up to 95%.

1.2 Objectives

a. The main objective of the project is to modify Cement Canvas by using locally available materials.
b. To find the properties of modified Cement Canvas.
c. To strengthen the material keeping it flexible and make it useable for various other construction activities.
d. To test and compare the product with the conventional Cement Canvas.

1.3 Methodology

The process starts from selection of materials and collection, laboratory testing data analysis, preparation of cement canvas, test on cement canvas & finally analyzing the result. Locally available material such as gunny bag, OPC(53grade) wire mesh, polypropylene fibre, M sand, fibre glass weaving thread, glass fibre mesh cotton canvas were collected.

The collected material were tested and compared with standard one. Three trials were conducted. After curing various test were conducted.

2. Literature Review

The British Army just placed a sizeable order for an innovative new material that combines the flexibility of fabric with the structural performance of concrete. Unlike anything else on the market, this revolutionary technology enables the use of concrete in a completely new way. The product, called Concrete Canvas, was developed by a British engineering company called Concrete Canvas. It will soon be

used to enhance frontline defences in Afghanistan for better performance and sustainability.

The story behind its inception is somewhat unusual. Four years ago, we entered a competition run by the British Cement Association. At the time, we had no idea that our entry for a rapidly deployable emergency shelter would result in the launch of our own technology development company. Our research has now included trips to disaster zones around the world, including Uganda and New Orleans

3. Procedure

1st Trial:

Materials Used

Gunny bag, OPC (53 grade), wire mesh, polypropylene fiber, M sand and fiber glass weaving thread.

Comment about preparation:

In this trial wire mesh was used as reinforcement for the preparation of modified Cement Canvas. But the final product was not much flexible in nature. It was foldable but the flexibility was less. So in the next trial instead of steel mesh; fiber mesh was used.

2nd Trial:

Materials used

Gunny bag, OPC (53 grade) polypropylene fiber, M sand, fiber mesh and fiber glass weaving thread.

Comment about preparation:

This trial gives primary requirement of the product such as good flexibility. The main difficulty in this trial is that the pore size of the gunny bag is larger than what we required. So during folding some amount of cement was escaping through these pours. So in the next trial instead of gunny bag; cotton canvas was used.

3rd Trial :

Materials used

Cotton Canvas, OPC (53 grade) polypropylene fiber, M sand, fiber mesh and fiber glass weaving thread.

Comment about preparation:

The pore size of cotton Canvas is very small so cement retained in the product. And also it gave good flexibility. It will affect the various properties of modified Cement Canvas. Also this trial gives primary requirement of the product such as good flexibility.

3.Test on Modified Cement Canvas

Table -1: Water absorption test

Sr no	Type	% of water absorption
1.	Gunny bag with Wire mesh	7.63
2.	Gunny bag With Fiber mesh	8.39
3.	Cotton Canvas with Fiber Mesh	8.20

Table -2: Flexural test

Sr no	Type	Flexural (breaking Load)	Day
1.	Gunny bag with Wire mesh	5.40	14 Days
2.	Gunny bag With Fiber mesh	12.49	28 days
3.	Cotton Canvas with Fiber Mesh	16.31	28 days

It is clear from the above test results that the value of gunny bag with fibre mesh as reinforcement is a better suited composition for this product. It gives good results in transverse strength test (1432.12N and 1541.12N) and surface hardness test (25.25). Hence it is safe to conclude from the three trials that gunny bag with fibre mesh as reinforcement is better composition than the other two.

4. CONCLUSION

Modified Concrete cloth is the latest and extremely useful innovation in field of construction. It is time and material saving technique. It is durable, flexible, economical and time saving. It allows concrete construction without the need of plant and mixing equipment. Simply position the modified concrete cloth and add water. It is less expensive to install compared to the conventional concrete.

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