International Journal of Advance Research in Science and Engineering
Volume No.07, Special Issue No.06, March 2018
www.ijarse.com
IJARSE
ISSN: 2319-8354

CANAL LINING BY USING CONCRETE JUTE BAGS

Ramesh.K[1], Aravindhan .K[2], Ajith.D[3], Ashok.S[4]

[1] *Assistant Professor, Department of Civil*

[2,3,4]*Final Year Student, Department of Civil*

AVC College Of Engineering,Mannampandhal, Mayiladuthurai-609305

ABSTRACT

Due to the deforestation and increased global warming, will reduces the rate of rainfall gradually over the years.It decreases the rate of water for irrigation. In this situation, excess of water is being absorbed by the dried earth surface, which is for irrigation through canals from the reservoirs. By minimizing the water absorptional losses, water could reach the tail end.In order to reduce such absorptional losses and also to minimize the maintenance of canal, an economically initiative product is introduced called as concrete jute bags.

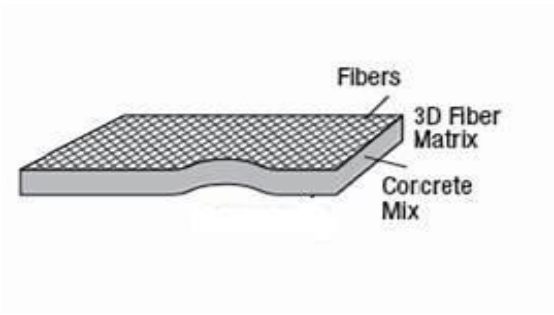
Key words*: *concrete jute bags, polypropylene coating, fiber matrix.

I INTRODUCTION

Concrete jute bags is an economically improved form of concrete canvas. Such a special concrete cloth is an upcoming revolution in the canal lining having the wide range of application in the state of emergency, etc. Due to its own physical property namely flexible and easy to use.They are the cement impregnated natural fibre that hardens when hydrated and finished to form thin, durable and water proof concrete layer. This evolution may lead to the new way of construction for many purposes. They have faster development around the word due to the significantly quicker and economical comparatively. By alternating the production process, concrete jute bags could be used for wide variety of application.

II CONCRETE JUTE BAGS

A flexible cement impregnated fabric, that hardens when hydrated to form a thin,durable concrete layer. It is a flexible mat containing a dry cement mix with polypropylene coating.



Cement: Substances obtained from calcium aluminates clinker.The major chemical elements are Al2O3,Cao,SiO2 and Fe2O3 appearing predominantly.

Fibers: Natural jute fiber subjected to an antimicrobial treatment and also coated with polypropylene yarns.

Further changes in the concrete cloth made incredible changes in the different constructional fields.

III MANUFACTURING PHASES

JUTE FIBER PREPARATION:

Initially the jute fiber has to be cutted and stretched to the required size.such a jute fiber is having the closely spaced fiber arrangement with sufficient twists and thickness towithstand on the concrete action and other applied forced.

ANTI-MICROBIAL TREATMENT:

It is followed as from ancient that, neem leaves having the anti-microbial characteristics and also having the bitter taste. And turmeric also having a such microbial inhibition property.Hence such a naturally available anti-microbial material are to applied on the natural fiber with sufficient time.

POLYPROPYLENE COATING:

Polypropylene substance is genrally emplyoed in all type of the plastic sac's such as cement bags .Hence by heating them directly and could be applied on the natural fiber.Now the fiber gains the action against decomposition,microbial attack and de-twisting actions from the natural force.

CEMENT APPLICATION: A raw dry cement is directly applied on the natural fiber without adding any ingredients on which. Hence it could sticks on to fiber matrices.

Afterwards,concrete jute bags is placed on to the site and nailed. Then water is sprayed on to which and the simple cement coating is provided and finished.

IV ADVANTAGES

Compared to traditional concrete solutions,it is faster,easier and more cost effective to install and has additional benefit of reducing the environmental impacts of concreting works by upto 95%.

It's typical installation speeds are upto 10 times faster than the conventional concrete solutions. They eliminate the need for plant on site and allowing concrete installation in areas with limited access.The speed and easeof installation means it is more cost effective than the conventional concrete, with less logistical burden. It is greatly reducing transportation logistics and onsite storage. It is a low mass,low carbon technology which uses upto 95% less material than conventional concrete for many applications.

- Water proof –polypropylene coating ensures,that concrete cloth is completely water proof.
- Durable concrete cloth is chemically resistance will not degrade in ultraviolet light.
- Environmental friendly.
- It is low mass and low carbon technology and is having menial impact on the total ecology due to its limited alkaline reserve and very low wash rate.

V APPLICATION

1.Canal lining:

It protects the water from absorptional losses in canal (i.e)the water released from the reservoir could reach the tail end.Hence by reducing the such absorbtionallosses,more amount water could be preserved and the annual maintenance of canal could also be reduced.

Lining canals with concrete is expansive and requires significance unkeep.

2. Slope protection:

Landslides can be triggered by many oftenconcomitant causes. In adittion to shallow erosion or reduction of shear strength caused by seasonal rainfall, causes triggered by anthropic activities such as adding excessive weight above the slope, digging at mid slope or at the foot of the slope, can also be included.

Concrete cloth can be used as stabilization and other erosion control applications such as temporary and permanet slope protection, retaining walls, boulder fences, low level bunds and river banks and dam revitments.

3.Pipe line protection:

Concrete cloth can be used as a coating for overland or underwater pipeline protection, providing a superior tough rock shield.In remote areas it can be used to coat steel pipe on site without expensive wet concrete application plants. It will set underwater and provide negative-buoyancy

4.Bund lining:

Earth containment bunds can be quickly lined with concrete cloth to provide an efficient, chemically resistant alternative to concrete walling. Bund lining also called a bund wall, is a constructed retaining wall designed to prevent inundation or breaches from a known source. It is a secondary containment system commonly used to protect environments from spills where chemicals are stored. CC can be used for hard armour capping of earth bunds around petrochemical tank farms, munitions depots and flood defenses. CC acts as an effective weed inhibitor, eliminating the maintenance required with grassed or earth bunds whilst providing a safe surface for trafficking.

5.Ground resurface:

Concrete cloth can be secured with ground anchors to rapidly create a concrete surface for flooring, pedestrian walkways or dust suppression.

Repairing existing concrete infrastructure can prove costly, difficult and time-consuming, typically requiring the removal and replacement of existing concrete which is extremely difficult, requires heavy plant and a large site team.

6.Gabbion reinforcement/Capping:

Gabion is a cage, cylinder, or box filled with rocks, concrete, or sometimes sand and soil for use in civil engineering, road building, and military applications.In a military context, earth- or sand-filled gabions are used to protect artillery crews from enemy fire.

Concrete cloth can be used to cap or repair gabion walls to provide long-term protection and prevent FOD (Foreign Object Damage). CC helps prevent loss of fill if the geo-textile has degraded from UV exposure or weathering and securely ties together multi-level gabion walls preventing movement and extending their life by decades.

CC provides a gabion covering solution which is fast, easy and cost effective to install. Capping: CC prevents water ingress which can cause slump due to water saturation and the migration of fines.

7.Dust suppression in helepad:

The turbulent air currents created by the helicopter rotor wash drives loose soil particles into the air.

The airborne dust particles negatively impact humans and wildlife, including aquatic life and vegetation. The dust also increases vehicle, helicopter, and equipment wear and damage due to mechanical abrasion.So, the concrete cloth was used as a dust suppression surface around Helicopter Landing Sites.

VI CONCLUSION

Concrete cloth is a latest and extremely useful innovation in field of concrete, which can change the perspectives about constructional materials and methods. Installation and applications of the concrete cloth has drastically reduced the manpower and mechanical power consumptive, it is one of the most economical and easier techniques in construction.

Furnished outlook, high durability and low maintenance makes its a reliable product. Maximizing the use can optimize the economy and save time. Overall, this innovation project can change the way of construction.

REFERENCE

[1]. Vedha Narayanan.V, International Journal on Applications in Civil and Environmental Engineering Volume 1: Issue 3: March 2015, pp 6-12. www.aetsjournal.com

[2]. Hrishikesh R. kane, Pratik D. Akarte, Roshan B. Akhude, P.S Randive. International Journal for Engineering Applications and Technology Volume 1, pp 2-7.

[3]. Maqbool Akhtar, Rajendra Singh Dangi. International Journal for Scientific Research and Development Volume 3: Issue 01: 2015, pp 314-315.
www.ijsrd.com

[4]. F. Han et al. 3D spacer fabrics. Construction and Building Materials 65 (2014) 620–629

[5]. Armakan DM, Roye A. A study on the compression behavior of spacer fabrics designed for concrete applications. Fiber Polym 2009; 10(1):116–23.