



“Innovative Canal Lining By Using Natural Element”

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Abstract : *The purpose of this study is to produce a comparative study of irrigation canal lining by the use of existing materials. This study reveals why irrigation canal lining and describes a number of various lining and there analysis. There are variable materials which are adopting concrete lining, brick lining, stone masonry lining, and polyethylene film with concrete cover and geo membranes lining. However in our country as per environmental condition mostly cement concrete lining is popular. Cost of each lining is different than others over of all these canal linings we introduce environmental friendly canal lining by using geotextile material “JUTE” As a reinforced material use as the base of canal body . and cement concrete mixture is replaced by all the natural elements like jute, jaggery, lime, crushed pebble stones ,etc.*

Key Words - C

INTRODUCTION

Canal lining is the process of reducing seepage loss of irrigation water by adding an impermeable layer to the edges of the trench. Seepage can result in losses of 30 to 50 percent of irrigation water from canals, so adding lining can make irrigation systems more efficient Canal linings are also used to prevent weed growth, which can spread throughout an irrigation system and reduce water flow. Lining a canal can also prevent waterlogging around low-lying areas of the canal.

Its an very economical method , process to laying out the canal trenches.

NEED OF THE STUDY.

The establishment of large hospitals where hundreds to thousands of patients are treated , it has created a serious problems of biomedical waste management. The seriousness of improper biomedical waste management was brought to the light during summer 1998. In India studies have been carried out at local / regional levels in various hospitals, indicate that roughly about 1-5 kg/bed/day to waste is generated. Among all health care personnel ,ward boys , sweepers, operation theatre & laboratory attendants have come into contact with biomedical waste during the process of segregation , collection, transport, storage & final disposal . The knowledge of medical , paramedical staff & ward boys , sweepers about the biomedical waste management is important to improve the biomedical waste management practices. The biomedical waste requiring special attention includes those that are potentially infectious , sharps ,example needle , scalpels , objects capable of puncturing the skin , also plastic ,pharmaceutical & chemically hazardous substances used in laboratories etc.

APPLICATIONS OF MATERIAL :**1. Application of “JUTE”:**

- strength and durability aspect but decreased the fluidity of concrete in a similar way to synthetic fibers. However, there is little research available on the durability of concrete reinforced with JTF.
- 100% Biodegradable recycleable & thus the environmental friendly.
- It has high tensile strength with low extensibility.
- It is thin or strong membrane fabric which is used to reinforce the soil & provide from damage.
- Jute geotextile has been found useful for control of surface soil erosion .
- It is also use as erosion prevesion material .



Fig . 1) jute

2. Applications of lime powder :

- Lime has been used as a building material for thousands of years because of its unique properties.
- Lime is strong, durable and flexible, which means that it can withstand construction loads without breaking down. It is also breathable, allowing moisture to evaporate, reducing the risk of dampness and mold.
- Another advantage of utilizing hydrated lime for soil stabilization is its positive effect on soil structure.
- Hydrated lime acts as a soil conditioner, improving the physical properties of the soil. It enhances soil aggregation, which refers to the binding together of soil particles into larger clumps or aggregate.



Fig . 2) Lime powder

3. Applications of crushed pebble stone:

- Crushed stone is used mostly as aggregate for road construction and maintenance.
- It is also used for making cement and lime and other chemical applications, and in agriculture.
- There are other uses for crushed stone, many field pebble stones used as a replacement of the aggregate



Fig . 3) crushed pebble stones

4. Applications of jaggery:

- Jaggery increases efficiency, durability, & compression strength
- After adding jaggery to the concrete hydration process is reduced.
- Jaggery is used as an admixture gives better workability than it made by using sugar as an admixture.
- % of admixture improved compressive strength & workability increased .



Fig . 4)jaggery

1.2 Objective of Proposed Study :

The main objective of this experimental test is to study the numbers of canal lining layers and effect of varying thickness of layers . also to compare the effect of varying the number of canal lining layers and thickness variation on the toughness & durability as well as life span of the existing lining or innovative lining . The various parameters considered in this study are as follows . The objectives of the present study are to understand the to stop Soil erosion by adding an extra material (Black Cotton Soil) the major objectives of the study are,

1. To reduce the Seepage.
2. To reduce Scouring.
3. To reduce the crack.
4. Improve soil properties.
5. To improve permeability characteristics.
6. To improve bearing capacity.
7. Use of Natural Material.

1.3 Casting:

The interior faces or edges of the canal were sharpened and tamping it by either manually or mechanically and then place the first layer of Geotextile material JUTE . after proper placing of jute layer spray an water on it for the bonding of the jute and base soil . meanwhile prepare a mixture of lining . after preparing the proper canal edges laying out the hands or by the weapon (Thapi).

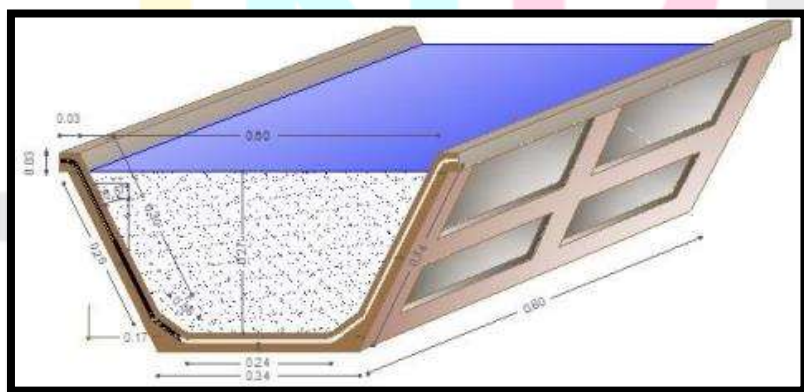


Fig 5). cross section of trapezoidal canal

1.4 Mixing proportion :

The blending system is significant for getting the necessary functionality. Materials were mixed manually. Lime powder, crushed pebble stones instead of aggregate, jaggery, . Next, the water was added gradually to the mixture, and the operation of mixing was continued until homogeneous mixture was obtained. Mix proportion was selected from suitable amount of ingredients in such a way to get a workable and homogeneous materials mixture. After sieving fine aggregates on 2.36 mm, finally a suitable mix proportion by weight was selected from a number of test investigations. The blend extent was 1:2 (lime: pebble stone) with water to solidify proportion of 0.40. the mix, crushed pebble stone (passed by 2.36 mm sieve) used as 50% replacement of aggregate & sand. Comparison between RCC and concrete.

1.5 Reactions in Mix Proportion:

Chemical reactions that release energy are called exothermic. In exothermic reactions, more energy is released when the bonds are formed in the products than is used to break the bonds in the reactants. Exothermic reactions are accompanied by an increase in temperature of the reaction mixture.

A chemical reaction is a process that leads to the chemical transformation of one set of chemical substances to another. Chemical reactions are an integral part of technology, of culture, and indeed of life itself. An exothermic reaction is a chemical reaction that releases energy by light or heat. It is the opposite of an endothermic reaction. Expressed in a chemical equation : reactants \rightarrow products + energy. This exercise will allow you to understand chemical reactions, explain what happens during an endothermic reaction, explain the role of a catalyst and make both quantitative and qualitative scientific observations.



Fig 6). Site location



Fig. 7) Canal Lining By innovative method

1.6 Results:

- Lining a canal can also prevent water logging around non laying areas.
- By making a canal less permeable , the water velocity increases resulting in a greater overall discharge.
- It helps to reduce seepage losses which saves water .
- It reduces maintenance costs and probabilityof canal results of increased stability that is achieved by the canal section.

1.7 Conclusion:

- The various types of FRCs, which can improve the performance of canal-lining by decreasing the rate of cracking, are discussed.

- Artificial and natural fibers can play a vital role in improvement of mechanical properties of concrete.
- In this study, the experimental behaviors of jute, nylon, and polypropylene fiber reinforced concrete (JFRC, NFRC, and PPFRC, respectively) are explored in order to check their suitability to control the rate of cracking in canal-lining. The considered material

1.8 Conclusion

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