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At Posheri, Post.Pimplas, Tal.Wada, Dist.Palghar Pin 421303

CERTIFICATE

This is to be certified that the project entitled **"ESTIMATION OF RESIDENTIAL BUILDING."** Is a bonafide work of **"MILIND B. DHULSADA, JAGRUTI A. MOKASHI, SAKSHI N. MALI, SAIRAJ S. PATIL"**, submitted to the University of Mumbai in partial fulfillment of the requirement for the award of the degree of **"Bachelors of Engineering"** in **"Civil Engineering."**

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ABSTRACT

The primary requirements for a person are food, clothing, and shelter. Shelter is as important as a food and clothing for the substance of life. A stable shelter protects us in many aspects ranging from harsh storms to seismic activities. However, a construction project must follow the rules and regulations of the government. That includes government regulations on the use of properties and obligations that are created in the process of construction. On emphasizing requirements of modernization this project has been choose to **"ESTIMATION OF RESIDENTIAL BUILDING"** which provides shelter for families.

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ABSTRACT

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This is to certify that the of Project entitled "**Study on Effects of Coconut Fibres on Mechanical Properties on Concrete.**" submitted to the University of Mumbai in partial fulfillment of the requirement for the award of the degree of "**Bachelors of Engineering**" in "**Civil Engineering.**"

Vishal R. Bhalerao	**[Roll No :- 03]**
Nishikant A. Umtol	**[Roll No :- 29]**
Vaibhav V. Binnar	**[Roll No :- 04]**
Parashar S. Vyapari	**[Roll No :- 30]**

Submitted to the University of Mumbai in partial fulfilment of the requirement for the award of the degree of Bachelor of Engineering in Civil Engineering.

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Abstract:

Coconut fiber is treated as natural fiber. Natural fibers are those fibre which are environment friendly, pollution free and does not have any bad effect on climate. Every year there is ample amount of wastage of natural fibre. If these fibers used as a construction material it could save the bio-reserves. They Acts as green construction material. Amongst all Natural fibres, coconut fibre is the fiber which has the better physical and chemical property also it is renewable, cheap, resistance to thermal conductivity, more durable, highest toughness, most ductile then other natural fibre. Hence, coconut fibre is a best material to be used in construction. The problem of high rate of water absorption of the fibre could be reduced by coating the fibres with oil. This study aimed at analyzing the variation in strength of coconut fiber (oil coated fibres) reinforced concrete at varying fibre contents and fiber size to compare it with that of conventional concrete. The addition of coconut fibre improves various mechanical properties of concrete. Addition of coconut fibre improves the compressive strength and split tensile strength of concrete, they also formed good bonding in concrete. The experiment was conducted on concrete with the addition of 3 mix proportions (1%, 2%, 3%) by the weight of cement. The compressive strength and split tensile strength of cured concrete evaluated for 7 days and 28 days. The study found the optimum fibre content to be 1% (by the weight of the cement). This result shows coconut fibre can be used in construction.

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DEPARTMENT OF CIVIL ENGINEERING
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This is to certify that the project work entitled "Experimental analysis on cellulose nanocrystal concrete" carried out by mentioned below Students, a bonafide students of IDEAL INSTITUTE OF TECHNOLOGY UNIVERSITY OF MUMBAI.

In partial fulfillment for the award of Bachelor of Engineering in Civil Engineering of the University of Mumbai, during the year 2022-2023. The report has been approved as it satisfies the academic requirements in respect of project work prescribed for the said Degree.

Submitted by

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Miss.Anjali Gaikawad
Miss.Tejal Thakare
Mr.Omkar Thakare

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ABSTRACT

Cement products are premier materials in the construction industry. They have excellent compression properties but are weak in tension. To increase the tensile strength, these products can be reinforced with bars, rods, fibers or prestressing. Introduction of nanoparticles in cement based materials has gained popularity in recent years due to their excellent mechanical properties and application potential. The addition of ultrafine nano material will help to reduce the cement content by partially replacing cement on weight basis to improve the binding effect. The ultrafine particles of nano material will also help reduce the formation of micro pores by acting as a filler agent, producing a very dense concrete and automatically reduce the growth of micro pores in the structures. This paper presents on the advantages and benefits to enhance the concrete by utilizing nano materials.

The objective of this project study is to, to prepare concrete of high strength and durability using cellulose nanocrystal (CNC) material, to prepare high workable concrete without loosing its strength also performing different test on cellulose nanocrystal base concrete such as: Compression test, Chemical resistance test, Micro structure analysis.

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This is to certify that the project (Part-I) entitled **Recycling of Grey Water into Usable Water by Using Natural Materials** is a bonafide work of **Rutik Patil, Dayanand Chaudhari, Onkar Raut, Rajesh Bhadange** submitted to University of Mumbai in partial fulfillment of the requirement for the award of the degree of **Bachelor of Engineering in Civil Engineering**

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Abstract

Recycling of Grey water generated from different industries by using the natural filter materials and making the water reusable for sanitary and irrigation purposes. The aim is to reduce the costly recyclable process of grey water to its minimum cost, hence making it suitable for village and low-income areas when such water can be treated at place with less cost and by achieving almost same quality of water. In view of rising concern about pollution of water bodies due to discharge of waste in them, it is necessary to initiate alternative thinking as conventional methods through Sewage treatment Plants have had limited success. In Rural areas we have some natural materials which can purify the water if used properly. In recent years many techniques by using such natural filters for purifying Grey water had came up. It treats the wastewater in natural manner without the use of chemicals. In short, the method used for this project is the improved method of using natural materials for recycling Grey water and obtaining best quality of recycled Grey water. The main objective of present research work is to provide and popularize a simple, feasible, practically sound, ecofriendly and cost-effective technology for wastewater treatment. In this filter the filtration is done by gravitational force. By using such Techniques, the load on the sewage impact will be reduced and will be converted into useable water for sanitary, gardening and irrigation purposes.

KEYWORDS: Grey water, Agricultural waste, low cost filtration, ecofriendly, natural materials for filtration.

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This is to certify that the project entitled **"SOLAR IRRIGATION SYSTEM"** is a bonafide work of **"PANKAJA RAO, ATUL MESTRY, VAIBHAV PALSHETKAR, and GAURAV PATEKAR"** submitted to the University of Mumbai in partial fulfillment of the requirement for the award of the degree of "**Bachelors of Engineering**" in "**Civil Engineering.**"

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EXECUTIVE SUMMARY

Worldwide, the need for energy, the availability of renewable resources, and the falling cost of renew- able energy technologies create multiple opportu- nities for PV technology. Photovoltaic solutions for on- and off-grid electrification are quite common and solar energy based water pumping is already widely used in drinking and livestock water supply as a low-maintenance option for rural areas. In the irrigation sector, however, the exploitation of PV-based water abstraction and conveyance technologies is still relatively rare, although the technology has proven to be a mature option – reliable and viable when properly planned and operated.

Most water pumps utilised for irrigation purposes worldwide are powered by engines running on fossil fuels (diesel, petrol, gas) or on electricity supplied from the grid (and thus produced by fossil fuel based generators). Fossil energy sources are limited in availability and the emissions from their utilisation have severe impacts on the global climate. At the same time, grid-based electricity supply tends to be insufficient and unreliable in developing countries, if not largely absent in rural areas. This context presents a **large potential to introduce PV technology** in irrigated agriculture. For India alone, it is estimated that farms operate 26 million diesel and electric pumps.

Photovoltaic powered irrigation is a **technically mature option**, even though it is not yet very widespread. From a technical point of view, photovoltaic water pumping can be integrated into most irrigation concepts. Water abstraction from ground or surface water sources is techni- cally feasible even where large pumping heads and large conveyance quantities must be handled. PV pumps can also be employed to pressurise closed irrigation systems including centre pivots. On the side of pump manufacturers, technology develop- ment is far advanced and the market can provide a suitable pumping solution for almost any require- ment and condition. This includes the integration of PV pumps into hybrid systems.

Limits upon a meaningful and feasible applica- tion of PV technology in irrigation result from agronomic and financial viability aspects. In contrast to public water supply, water pumping for irrigation has to follow an economic rationale –

a farmer is an entrepreneur, no matter how small his landholding may be. The main considerations of a farm household are always production (food) security and the generation of income, hence maximisation of production and minimisation of fixed and variable production costs. Promotion efforts have to take these limits into account and must proceed from an understanding that the utilisation of PV technology requires high initial capital investment and technological know-how for system design and development.

Photovoltaic water pumping in irrigation is currently largely promoted by subsidising the technology in order to be an attractive alternative for the farmer. **Subsidisation**, however, should not result in non-adherence to principles of economic feasibility – for example, solar-powered water lifting from a deep borehole should not be employed to irrigate low yielding oilseeds in tradi- tional basins, as can be observed in India. In this case, the costs and benefits are in no meaningful relation to each other but the equation is neglected due to subsidisation.

Based on the analysis presented in this report, photovoltaic water pumping in irrigation can be best utilised in the following contexts:

- **Surface irrigation:** Water abstraction from surface water resources (rivers, lakes) or shal- low groundwater resources and injection into primary canals for onward water distribution;
- **Drip irrigation:** Water abstraction from sur- face or groundwater resources and (i) injection into storage facilities, (ii) direct injection into a pressurised system or (iii) injection from a storage facility into a pressurised system.

Water pumping with PV pumps from deep groundwater resources (or lifting from surface water resources up-hill with a large head) for water-intensive surface irrigation is not a feasible option due to the required dimensions of the PV generator and pump. Likewise, water pumping from groundwater or surface water resources for pressure-demanding sprinkler irrigation is not a viable option.

PV pumps have the **comparative disadvantage** that their performance is correlated to the level of radiation or rather the yield in solar energy that can be supplied to the pump. A PV pump is hence always sized larger than alternative diesel or grid-fed electric pump solutions – a PV pump must achieve an adequate performance related to irrigation needs even in the low-radiation periods of the day (morning/afternoon). This need for larger sizing usually results in over-capacity in the high-radiation periods of the day (noon).

Cost-efficient and viable operation of PV pumps in irrigation can be achieved if a number of prin- ciples are observed:

- Water-saving irrigation methods should be employed in order to reduce water pumping requirements – the most appropriate irriga- tion method in this sense is drip irrigation in low-pressure systems – 4 bars;
- Intermediate water storage tanks/basins (covered storage is to be preferred to avoid evaporation losses) should be integrated into the design of a Solar Powered Irrigation Sys- tem (SPIS) in particular in areas with deep aquifers – to create a low-head water source and create water autonomy for periods with low radiation; elevated storage tanks/basins that can provide onward gravity flow into the (low-pressure) network are ideal;

Key barriers to a larger degree of SPIS develop- ment today include up-front investment costs and the technical know-how for site-adapted design and development. Professional services for instal- lation and maintenance are available to a growing extent. The development of operational skills for SPIS is manageable as long as system developers document the systems in an appropriate way and provide training to their clients. Key to an indi- vidual system's sustainability and success is the adaptation of the agricultural production process. Here, agricultural extension and information ser- vices need to develop their capacities in line with the demands arising from SPIS

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This is to certified that the project entitled "**GREEN BUILDING**" is a bonafide work of "**VAIBHAV RANDIVE, PRADNYA KINI, BHAVESH VASANT JOSHI, RHISHABH OMPRAKASH SHUKLA**" submitted to the University of Mumbai in partial fulfillment of the requirement for the award of the degree of "**Bachelors of Engineering**" in "**Civil Engineering.**"

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The term "green building" is used to describe buildings that are designed, constructed, and operated, to have a minimum impact on the environment, both indoor and outdoor. Most discussions of green buildings refer to the importance of providing an acceptable, if not exceptional, indoor environment for the building occupants. However, these discussions of indoor environment quality have not included many specific recommendations or criteria for building design, construction, or operation. Building projects described as green building demonstrations often make reference to indoor air quality, but these references are often general and qualitative. In addition, rating systems that have been developed to assess the "greeness" of a building are based largely on design features and are not particularly specific with respect to indoor air quality. This paper reviews the features of indoor air quality that are considered in green building discussions, demonstration projects, and rating systems. These green building features are discussed in terms of their completeness and specificity, and are compared to other guidance on building design, construction, and operation for good indoor air quality. A case study of indoor air quality performance in a green building is presented. This study includes a description of the indoor air quality features of the building and the results of a short-term indoor air quality evaluation of the building involving ventilation and contaminant concentration measurements

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This is to certified that the project entitled **"NET ZERO ENERGY RESIDENTIAL BUILDINGS "** is a bonafide work of **UMESH CHINTU RASAL , VINOD PRABHAKAR GHATAL "** submitted to the University of Mumbai in partial fulfillment of the requirement for the award of the degree of "**Bachelors of Engineering**" in "**Civil Engineering.**"

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Net zero energy residential buildings are homes that produce as much energy as they consume over the course of a year, resulting in zero net energy consumption from the grid. These buildings are designed to be highly energy efficient, using passive solar design, insulation, efficient lighting, and appliances, and renewable energy sources like solar panels to generate the energy they need.

To achieve net-zero energy, the building must have an energy-efficient design that includes insulation and air-tight construction. It must also use high-efficiency heating, cooling, and ventilation systems, and energy-efficient appliances and lighting. Any remaining energy requirements can be met by renewable energy sources such as solar panels.

Net-zero energy residential buildings have numerous benefits, including lower energy bills, reduced dependence on the grid, and a smaller carbon footprint. Additionally, these buildings can be healthier and more comfortable for occupants, with better indoor air quality, natural lighting, and temperature control.

As the world shifts towards a more sustainable future, the construction of net-zero energy residential buildings is becoming increasingly common. Governments and municipalities are also providing incentives to encourage the construction of these buildings, which is helping to make them more accessible to the wider public.

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ABSTRACT

In today's world the farmers are facing problems related to agriculture solutions. The Indian agriculture is plagued by several problems; some of them are natural and some others are manmade. The Irrigation in India Focus on some serious issues water scenario is now fast changing as a result of increasing population, rising demand for irrigation in India to raise high-yielding varieties of crops, rapid urbanization and industrialization, electricity generation, impact of global warming and erratic rainfall.

In spite of the large scale mechanisation of agriculture in some parts of the country, most of the agricultural operations in larger parts are carried on by human hand using simple and conventional tools and implements like wooden plough, sickle, etc.

Little or no use of machines is made in ploughing, sowing, irrigating, thinning and pruning, weeding, harvesting threshing and transporting the crops. This is specially the case with small and marginal farmers. It results in huge wastage of human labour and in low yields per capita labour force.

There is urgent need to mechanise the agricultural operations so that wastage of labour force is avoided and farming is made convenient and efficient. Agricultural implements and machinery are a crucial input for efficient and timely agricultural operations, facilitating multiple cropping and thereby increasing production.

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Year 2022-23

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This is to certified that the project entitled "**COCONUT COIR CONCRETE BLOCK**" is a bonafide work of "**AKSHAY VIJAY AHER, RAJAN SURESH YADAV, MAYUR JADHAV**" submitted to the University of Mumbai in partial fulfillment of the requirement for the award of the degree of "**Bachelors of Engineering**" in "**Civil Engineering.**"

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