



RAJENDRA MANE POLYTECHNIC, AMBAV(DEVROKH) NEWS LETTER



CIVIL ENGINEERING DEPARTMENT

Volume 04, December 2018

CHAIRMAN SIR MESSAGE



"Education is the movement from darkness to light". The principle objective of the PSPS Foundation is "To carry on activities for the benefits and development of residents of rural India by application of all suitable means available with focus on issues like health, literacy, non-formal education, etc."

HON. SHRI. RAVINDRA MANE

PRINCIPAL MESSAGE



I am very happy to note that the Department of Civil Engineering of Rajendra mane Polytechnic (Ambav- Devrukh) is releasing its Newsletter enumerating the various activities and achievements of their faculty and students. We can call civil engineer as a creative artist since they build beautiful structures, as we dream, using basic materials. We have to analyses many case studies of structure failures as they remain as a new dimension of knowledge to learn and to avoid any such failures in the future.

MR. N. B BHOPALE

Hence as Civil Engineering students should learn the subject in detail without any doubts and execute works with total care to march towards success in your profession. I have pleasure to see department is striving hard to make a mark in this Institution by way of its academic growth and consultancy work. I congratulate all the students who have put their efforts in bringing this first newsletter issue and also appreciate HOD and all faculty members for motivating their students towards this fulfilment. I wish each one of them in the Department success in all their endeavours

All your dreams can come true if you have the courage to pursue them||

-Walt Disney

HEAD OF DEPARTMENT MESSAGE



MR. P. P. SAWANT

The Civil Engineering Department was established with a prime objective to proliferate knowledge. We aim to promote Civil Engineering by providing the much-needed practical exposure to the students through its regular activities like academic curriculum, technical seminars, research symposium, talks on ongoing research practices throughout the globe and many other related topics from distinguished practitioners.

Collaboration between the department and industry is important for the advancement of engineering teaching and research. With this aim, to give our students some practical insight into Civil Engineering, we organize several visits throughout the year to ongoing construction sites thus giving them a chance to interact with key personnel of the industry. Student of Civil Engineering Association, organizes different events to provides a platform to budding civil engineers to create, innovate and learn various aspects of civil engineering through competitions.

The elevator to success is out of order. You'll have to use the stairs, one step at a time. ||

-Joe Girard

ABOUT THE DEPARTMENT

The department of Civil Engineering of Rajendra Mane Polytechnic, Ambav (Devrukh) was established in the year 2010. The achievements of the students have been prolific in academic, co-curricular and extra-curricular activities.

The department is led by Prof. P. P. Sawant and has a well-qualified staff consisting of 07 lecturers (50% of faculties are pursuing post-graduation in civil engineering) and 03 lab. Assistants. The faculty members are engaged actively in enhancing industrially beneficial activities.

VISION

“ To develop highly competent civil engineering technocrats.”

MISSION

1. To excel in imparting extensive knowledge in Civil Engineering prescribed by MSBTE Diploma curriculum.
2. To prepare the students with knowledge and necessary technical skills required for higher education, Job and to be successful entrepreneurs.
3. To develop ethics and values among the students to create socially and environmentally conscious technocrats.
4. To develop all round personalities of the students for imparting lifelong learning.

DEPARTMENTAL GOAL

“Imparting quality education to the students and to produce dedicated professional Civil engineer with a spirit of national character and international standards and to make the Department a Centre of Excellence in industrial research and development”

SALIENT FEATURES OF THE DEPARTMENT

Offering Diploma in Civil Engineering: since 2010 with (60 Intake capacity)

The laboratories of the department have been modernized with additional of state-of-art instruments and equipment.

Take time to deliberate; but when the time for action arrives, stop thinking and go on. || -Napoleon Bonaparte

FACULTY MEMBERS

TEACHING STAFF

Mr. N. B. BHOPALE

PRINCIPAL, B.E (Civil), AMIE, Experience; 15 years

Mr. P. P. SAWANT

H.O.D. M.E.(Civil); B.E (Civil), Experience; 9 years

Ms. M. J. JOSHI

B.E (Civil) Experience; 8 years

Mr. B. J. PATIL

B.E (Civil), Experience; 7 years

Ms. S. R. JADHAV

B.E (Civil), Experience; 1 years

Mr. N. N. BOTHALE

B.E (Civil), Experience; 0.5 years

Mr. S. A. DHANAWADE

B.E (Civil), Experience; 0.5 year

NON- TEACHING STAFF

Ms. K. A. APRAJ

Mr. G. A. NATE

Civil Engineering Student Association

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SHETYE SWAROOP VINAYAK

VICE PRESIDENT: -

NAGAREKAR ADITYA KRUSHNA

SECRETARY: -

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PADALKAR SHUBHAM GANESH

KONDKARI HASIB NAWAB

MOHITE ABHIJIT AVINASH

DANDEKAR LAKSHUMAN Y.

PENDHARI ASMITA DILIP

INDULKAR MAYURESHWAR R.

GURAV SAPNA GANGARAM

MAIN ADITYA UDAY

PANJRI MOHAMMED TASHIF

ABDUL MAJEED

SAWANT SOHAM ANANT

DEPARTMENTAL LABORATORIES



MECHANICS OF STRUCTURE

The main target of the study is to clarify the process of load distribution and deformation and time dependent change of strength and serviceability of structures.

CONCRETE TECHNOLOGY

The laboratory allows the students test to assess the various fresh and hardened concrete properties that many affect the performance of concrete member.



GEOTECHNICAL ENGINEERING

Integral part of soil mechanics and foundation engineering a proper evaluation of soil samples and analysis of test results.



Quality is more important than quantity. One home run is better than two doubles. -Steve Jobs

SURVEYING

Principle of surveying: Work from whole to the part



PUBLIC HEALTH ENGINEERING

Public health engineering needs to maintain a good knowledge of practices and principles of public health.

Department undertakes consultancy and testing activities as follows.

- Testing of different construction materials such as Steel, Concrete, Soil, Aggregate, Pipes etc.
- Design of concrete Mix.
- Planning and design of different Civil Engineering Structures Such as Buildings, Retaining walls, Water tanks, Bridge etc.
- Third party technical audits of all Civil Engineering Structures.
- Water Quality Analysis
- Sewage and effluent testing

Lab Up gradation in successive academic years

Sr. No.	Name of laboratory	Amount
1	Building construction	112320.00
2	Concrete technology	478273.25
3	Geotechnical Engineering	408300.00
4	Surveying	989740.00
5	Public health engineering	245572.13

MOU SIGNED BY DEPT. FROM LAST 3 YEARS,

Sr.no	Academic year	Name of program
1	2018-19	Auto cad
2	2017-18	Auto cad
3	2016-17	Soft skill
4	2015-16	Auto cad

Achievement of Students:

Name of the Student	Class	Name of the Competition	Venue of Competition	Rank Achieved
Madhura Ghanekar	T.Y.	Floating Structure	Gharda Institute	Participate
Harshada Gurav	T.Y.	Floating Structure	Gharda Institute	Participate
Rutuja Shirdhankar	S.Y.	Pioneer 2k18	Rajendra Mane Polytechnic, Ambav	Winner
Afrin Tadvi	T.Y.	Pioneer 2k18	Rajendra Mane Polytechnic, Ambav	Winner
Aditya Nagarekar	S.Y.	Pioneer 2k18	Rajendra Mane Polytechnic, Ambav	2 nd Runner-up
Jaykumar Rathod	S.Y.	Pioneer 2k18	Rajendra Mane Polytechnic, Ambav	2 nd Runner-up

Academic Achievement

Academic Year	Result
2014-2015	82.05%
2015-2016	71.42%
2016-2017	82.45%
2017-2018	82.92%

– Everyone loves justice in the affairs of another. ‖ -Italian Proverb

“Polymer Modified Steel Fiber Reinforced Concrete”

Prof. Sunil Dhanawade

INTRODUCTION

The concrete is a popular building material in the world for past 170 years and more. Though worldwide used concrete has biggest disadvantages such as delay in hardening, low tensile strength, large drying shrinkage and low chemical resistance. To overcome this disadvantages attempt is made by modifying cement concrete with polymer additives, such as thermoplastics, thermo sets like epoxy resins which hardens, elastomers or rubbers, natural polymers cellulose, lignin and proteins. Wear resistance increases as the polymer bridges the micro cracks propagation inside the matrix and at the aggregate matrix interface. since pullout resistance is proportional to interfacial surface area, non-round fiber cross sections and smaller diameter round fibers after more pull out resistance per unit volume than larger diameter round fiber because they have more surface area per unit volume. On this Basis, it would appear that the fibers should have an aspect ratio high enough to ensure that their tensile strength is approached as the composite fails. Investigation of bond strength and flexural behavior of fiber reinforced polymer strengthened reinforced concrete beams using cement-based adhesive has been done by Hashemi.

HISTORY OF POLYMERS IN CONCRETE

Polymers have been used in construction as long ago as the fourth millennium B.C. when the clay brick walls of Babylonia were built using the natural polymer asphalt in the mortar. The temple of Ur-Nina (King of Lagash), in the city of Kish, had masonry foundations built with mortar made from 25 to 35% bitumen (a natural polymer), loam, and chopped straw or reeds. Synthetic polymers were invented in the 1940s in response to the wartime decline in the availability of natural rubber and the increased demand of the war effort. Incorporation of synthetic polymers in portland cement mortars and concrete started in the 1950s (Dikeou 1978; Chandra and Ohama 1994).

MICRO STRUCTURE OF POLYMER

Concrete polymer composites are generally classified as Polymer impregnated concrete (PIC) is a hydrated Portland cement concrete which has been impregnated with monomer and

subsequently polymerized in situ, Polymer concrete (PC) is a composite material formed by polymerizing a monomer and aggregate mixture. When polymer firstly mixed with fresh concrete, polymer particles suspended in the latex are ideally dispersed throughout cement paste. Cement hydration starts, saturating the solution with CH, and generating ettringite and CH crystals in the zone adjacent to aggregates and probably calcium silicate layer on the aggregate forms. Polymer particles deposit on the gel products and on the unhydrated clinker particles. The accumulating polymer particles eventually fill many of the capillary pores and coat the inner surfaces of those they don't completely fill. When water is further withdrawn by hydration or drying, the close-packed polymer particles on the gel products and in the voids coalesce into continuous films or membranes, forming a co matrix intermingled with the hydrated cement paste and

binding the hydrates to each other to the aggregates.

APPLICATIONS

PMC are primarily used as overlays on roadway and bridges, both as new construction and as repairs of existing deteriorated structures. Relatively new application which proved to be very promising are its use in combination with fiber reinforcing. Possible future applications include roller compacted concrete (RCC) for air strips, roadways, parking lots and ductile concrete foundation, shear wall connection. Its use is also predicted for marine and offshore structures. PMC is also used for concrete and stone repair material, as cement adhesives, prefabricated building components like flag stone, tubes, panels, porous and eco concrete, machine base elements and chemical resistance material, industrial floor and liquid applied and water proofing materials.

“Nanotechnology in Construction Engineering”

Aditya Nagarekar, Jaykumar Rathod

INTRODUCTION

Nanotechnology is the re-engineering of materials and devices by controlling the matter at the atomic level. In other words, nanotechnology is a field that is dominated by developments in basic physics and chemistry research, where the phenomena on atomic and molecular levels are used to provide materials and structures that perform tasks that are not possible using the materials in their typical macroscopic form. The evolution of technology and instrumentation, as well as its related scientific areas, such as physics and chemistry, is making the research on nanotechnology aggressive and evolutionary. Not surprisingly, it has been observed that expenditure on nanotechnology research is significant. The use of nano-particles, carbon nano-

tubes, and nano-fibers to increase the strength and durability of cementitious composites, as well as for pollution reduction.

- Production of cheap corrosion free steel.
- Production of thermal insulation materials with performance of 10 times the current commercial options.
- Production of coats and thin films with self-cleansing ability and self-colour change to minimize energy consumption

APPLICATION OF NANOTECHNOLOGY IN CONSTRUCTION

1.Nano-cement: -

Portland cement is the most widely used construction material. It can be argued that concrete utilizes nanotechnology because it contains nano-particles as its ingredients, including nano-water particles and nano-air voids. However, it is not the application of the technology at nano-level. If it is possible to create the technological tools and organize the amount and locations of these nano-ingredients in a scientific way, then, concrete can experience the advances of nanotechnology. Concrete is, after all, a macro-material, strongly influenced by its nano-properties and understanding it at nano level can provide the avenues for improvement of strength and durability. The particle size of cement can be reduced to nano-size or can be modified by adding nano-tubes and reactive nano-size silica particles. A number of investigations have been carried out to develop smart concrete using carbon fibers and it has been found that instead of carbon fibers, nano-carbon tubes added with nano-cement are more effective.

2.Nano-composites: -

Nano-composites can be developed by using nano-tubes, which can implant some of the outstanding properties of the nano-tubes. Alumino-silicates are mixed with carbon nano-tubes, which can produce strong and durable conductive films. Furthermore, the current sizes of alumino-silicates (50 to 100 nm) can further be reduced to 5 to 10 nm range, and a little volume percent of nano-tubes ($\approx 0.5\%$) can produce extraordinary composites. Besides, fibre wrapping that has been commonly

used to strengthen the existing concrete structures has witnessed advancement by using fibre sheet(matrix) containing nano-silica particles and hardeners. These nano-particles penetrate and close small cracks on the concrete surface and, in strengthening applications, the matrices form a strong bond between the surface of the concrete and the fibre reinforcement. A detailed discussion on the different types of nano-cement composites is presented later

CONCLUSION

Based on the short review in this paper, nanotechnology has the potential to be the key to a brand-new world in the field of construction and building materials. Although replication of natural systems is one of the most promising areas of this technology, scientists are still trying to grasp their astonishing complexities. Furthermore, nanotechnology is a rapidly expanding area of research where novel properties of materials manufactured on nano-scale can be utilized for the benefit of construction infrastructure, and a number of promising developments exist that can potentially change the service life and life-cycle cost of construction infrastructure to make a new world in the future.

Academic Monitoring Remark

Academic Year	Remark
2014-2015	Very Good
2015-2016	Very Good
2016-2017	Very Good
2017-2018	Very Good

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- Third party technical audits of all Civil Engineering Structures.
- Water Quality Analysis
- Sewage and effluent testing

EXTRA ACTIVITIES



“PIONEER 2K18”



EXPERT LECTURE ON THE TOPIC OF SOFTWARE'S FOR DRAFTING



INDUSTRIAL VISIT S.Y. CIVIL CLASS



EXPERT LECTURE ON THE TOPIC OF SAFETY MEASURES ON SITE



INDUSTRIAL VISIT T.Y. CIVIL CLASS

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-Remember to enjoy being in this world, being able to do what you are doing. - Stephen Schwartz