IFERP®
connecting engineers... developing research

BABU BANARASI DAS UNIVERSITY

2nd International Conference on Civil Engineering, Architecture and Sustainable Infrastructure

VIRTUAL CONFERENCE

ICCEASI-2022

09th - 10th February 2022 | Lucknow

Organized By

Babu Banarasi Das University, Lucknow

in Association with

Institute For Engineering Research and Publication (IFERP)

ISBN : 978-93-92105-34-0

ICCEASI - 22

2nd International Conference on Civil Engineering, Architecture and Sustainable Infrastructure

Virtual Conference

09th – 10th February, 2022

Organized by:

Babu Banarasi Das University, Lucknow

In Association with:

Institute For Engineering Research and Publication (IFERP), India

Rudra Bhanu Satpathy
Chief Executive Officer
Institute For Engineering Research and Publication.

On behalf of ***Institute For Engineering Research and Publications (IFERP)*** and in association with ***Babu Banarasi Das University, Lucknow***. I am delighted to welcome all the delegates and participants around the globe to ***Babu Banarasi Das University, Lucknow*** for the "***2nd International Conference on Civil Engineering, Architecture and Sustainable Infrastructure "(ICCEASI-22)"*** Which will take place from ***09th – 10th February 2022***

It will be a great pleasure to join with Engineers, Research Scholars, academicians and students all around the globe. You are invited to be stimulated and enriched by the latest in engineering research and development while delving into presentations surrounding transformative advances provided by a variety of disciplines.

I congratulate the reviewing committee, coordinator **(IFERP & BBDU)** and all the people involved for their efforts in organizing the event and successfully conducting the International Conference and wish all the delegates and participants for their virtual presence.

Sincerely,

Rudra Bhanu Satpathy

Preface

The ***2nd International Conference on Civil Engineering, Architecture and Sustainable Infrastructure (ICCEASI-22)*** is being organized by ***Babu Banarasi Das University, Lucknow*** in Association with ***IFERP-Institute For Engineering Research and Publication*** *on the 09th – 10th February, 2022*.

The ***"2nd International Conference on Civil Engineering, Architecture and Sustainable Infrastructure"*** was a notable event which brings Academia, Researchers, Engineers, Industry experts and Students together.

The purpose of this conference is to discuss applications and development in area of **"Civil Engineering, Architecture and Sustainable Infrastructure"** which were given International values by ***Institute For Engineering Research and Publication (IFERP).***

The International Conference attracted over 120 submissions. Through rigorous peer reviews 71 high quality papers were recommended by the Committee. The Conference aptly focuses on the tools and techniques for the developments on current technology.

We are indebted to the efforts of all the reviewers who undoubtedly have raised the quality of the proceedings. We are earnestly thankful to all the authors who have contributed their research works to the conference. We thank our Management for their wholehearted support and encouragement. We thank our Principal for his continuous guidance. We are also thankful for the cooperative advice from our advisory Chairs and Co-Chairs. We thank all the members of our local organizing Committee, National and International Advisory Committees.

ICCEASI-22

Message from Steering Committee Chair

Mr. Kamal Nabh Tripathi
Assistant Professor in Department of Civil Engineering
Babu Banarasi Das University

The conference provides platform for researchers to get networked and exchange the ideas for further progress in research and development. 2022 - Second International Conference on Civil Engineering, Architecture and Sustainable Infrastructure (ICCEASI - 22.is a flagship conference of BBD University and it is motivated by the grand success of ICCEASI-22 wherein all the papers accepted and presented have been indexed in Scopus. ICCEASI-22 has a vision to make the researchers to have good social networking in the areas of Civil Engineering Architecture and bring forward to the society their contributions. I am thankful to IFERP, for their support in making this conference to get approval from Scopus Index journals and UGC care journals.

I thank our Honorable Chancellor, President and Vice Chancellor, Babu Banarasi Das University, IFERP Team for his constant support and encouragement to conduct such a prestigious conference in the state of Uttar Pradesh. I thank Vice Chancellor Prof (Dr.) Arun Kumar Mittal for motivation and support to organize this conference.

My sincere gratitude's are towards our vibrant Civil Engineering faculty and staff members for their un-tired efforts towards the conference.

The conference has peer reviewed process for all the articles to maintain the quality interactions and publications by using feedback from reviewers and anti-plagiarism software. Tutorials and keynote sessions have been arranged to benefit the researchers to work on recent challenges in emerging technical areas. The organizing committee of BBD University has done a good job in bringing out the proceedings, thanks to committee.

I wish all the conference participants and organizers a big success!

Message from Convenor

Mr. Mohammad Afaque Khan
Assistant Professor in Department of Civil Engineering
Babu Banarasi Das University

The primary goal of the conference is to promote research and development activities in different fields of to Civil Engineering, Architecture and Sustainable Infrastructure and to promote scientific information interchange between researchers, developers, engineers, students, and practitioners working in India and abroad. Conference is aimed at providing a platform to all researchers to interact, share their research findings and to discuss their research ideas with the co-researchers from all over the world. It also provides an opportunity to highlight recent developments and to discuss future directions on these exciting fields. Keynote lectures by experts in various fields will inspire the researchers and provide an exposure to various aspects and an opportunity for discussions with distinguished experts. It is earnestly hoped that the conference will be of great success in bringing more researchers together. Researchers from various research laboratories, industries, academia and the research scholars pursuing their Doctoral / Masters Work are invited to present their original work and participate in ICCEASI – 2022, a two days virtual event in the academic and serene environs organized by Babu Banarasi Das University, Lucknow, in Collaboration with IFERP. I wish all the conference participants and organizers a big success!

Message from Steering Committee member

Mr. Bilal Siddiqui
Assistant Professor in Department of Civil Engineering
Babu Banarasi Das University

The marvels of human mind perennially persuade the gathering and growth of human knowledge. In bringing out this volume of scientific knowledge, we are largely benefited from the ICCEASI-22 conference under the technical support of IFERP. The ICCEASI 2022 committees rigorously invited submissions for many months from authors to contribute to the conference by submitting articles that illustrate research results, application projects, survey work and industrial experiences describing significant advances in the disciplines of Civil Engineering. This effort guaranteed submissions from an unparalleled number of internationally recognized top-level researchers. All the submissions underwent a strenuous peer-review process which comprised expert reviewers. These reviewers were selected from a talented pool of Technical Committee members and external reviewers on the basis of their expertise

Mr. Indresh Kumar
Assistant Professor in Department of Civil Engineering
Babu Banarasi Das University

Second Virtual International Conference on Civil Engineering, Architecture and Sustainable Infrastructure (ICCEASI- 2022), will be held during 9th February to 10th February 2022 organised by Babu Banarasi Das University, Lucknow, Uttar Pradesh, India. ICCEASI – 2022 is to bring together innovative academics and industrial experts from the different fields of Engineering to the common forum. The primary goal of the conference is to promote research and development activities in different fields of to Civil Engineering, Architecture and Sustainable Infrastructure and to promote scientific information interchange between researchers, developers, engineers, students, and practitioners working in India and abroad. Conference is aimed at providing a platform to all researchers to interact, share their research findings and to discuss their research ideas with the co-researchers from all over the world. It also provides an opportunity to highlight recent developments and to discuss future directions on these exciting fields

Mr. Faraz Khan
Assistant Professor in Department of Civil Engineering
Babu Banarasi Das University

It is my pleasure to welcome all the attendees for the First International Conference on Civil Engineering, Architecture and Sustainable Infrastructure (ICCEASI - 22) held at Babu Banarasi Das University, Lucknow, India from February 9th-10th, 2022. The marvels of human mind perennially persuade the gathering and growth of human knowledge. In bringing out this volume of scientific knowledge, we are largely benefited from the ICCEASI-22 conference under the technical support of IFERP. The ICCEASI 2022 committees rigorously invited submissions for many months from authors to contribute to the conference by submitting articles that illustrate research results, application projects, survey work and industrial experiences describing significant advances in the disciplines of Civil Engineering. This effort guaranteed submissions from an unparalleled number of internationally recognized top-level researchers. All the submissions underwent a strenuous peer-review process which comprised expert reviewers. These reviewers were selected from a talented pool of Technical Committee members and external reviewers on the basis of their expertise. The papers were then reviewed based on their contributions, technical content, originality and clarity. The entire process, which includes the submission, review and acceptance processes, was done electronically. All the accepted for presentation and publication in the proceedings, which will be indexed in Scopus. All these efforts undertaken by the Organizing and Technical Committees has led to an exciting, rich and a high quality technical conference program, featuring high-impact presentations for all attendees to enjoy, appreciate and expand their expertise in the latest developments in various areas covering Civil Engineering and Architecture It is my humble wish that the professional dialogue among the researchers, scientists, engineers, students and educators continues beyond the event and that the friendships and collaborations forged will linger and prosper for many years to come.

Mr. Ankit Verma
Assistant Professor in Department of Civil Engineering
Babu Banarasi Das University

It is my immense pleasure to welcome you all to the ICCEASI- 2022 Conference on Civil Engineering, Architecture and Sustainable Infrastructure. It provides an opportunity for the meeting of International Researchers, Engineers, Scientists, and specialists in the various research and development fields of Engineering and Technology. The conference offers a premise for global experts to gather and interact intensively on the topics of Civil, Electrical and Electronics, Electronics and Communication, Electronics and Instrumentation, Computer Science and Information Technology. All the submissions underwent a strenuous peer-review process which comprised expert reviewers. These reviewers were selected from a talented pool of Technical Committee members and external reviewers on the basis of their expertise. The papers were then reviewed based on their contributions, technical content, originality and clarity. The entire process, which includes the submission, review and acceptance processes, was done electronically. All the accepted for presentation and publication in the proceedings, which will be indexed in Scopus. All these efforts undertaken by the Organizing and Technical Committees has led to an exciting, rich and a high quality technical conference program, featuring high-impact presentations for all attendees to enjoy, appreciate and expand their expertise in the latest developments in various areas covering Civil Engineering and Architecture It is my humble wish that the professional dialogue among the researchers, scientists, engineers, students and educators continues beyond the event and that the friendships and collaborations forged will linger and prosper for many years to come.

Mrs. Neeti Mishra
Assistant Professor in Department of Civil Engineering
Babu Banarasi Das University

It is my immense pleasure to welcome you all to the ICCEASI- 2022 Conference on Civil Engineering, Architecture and Sustainable Infrastructure. It provides an opportunity for the meeting of International Researchers, Engineers, Scientists, and specialists in the various research and development fields of Engineering and Technology. The conference offers a premise for global experts to gather and interact intensively on the topics of Civil, Electrical and Electronics, Electronics and Communication, Electronics and Instrumentation, Computer Science and Information Technology. I hope eminent speakers will cover the theme computation and innovation from different perspectives. I am privileged to say that this conference will definitely offer suitable solutions to the global issues. I am also most grateful to the supporting organizations, which have provided support to this conference financially and technically, in spite of the present economic scenario. The success of this Conference is solely on the dedication and efforts of innumerable people who started working on the preparations for almost a year in many ways to make this Conference become a reality. Eventually I express my special thanks and appreciation to all.

ICCEASI -22

2nd International Conference on

Civil Engineering, Architecture and Sustainable Infrastructure

Keynote Speakers

Dr. Young-Jin Cha

Associate Professor, University of Manitoba, Winnipeg,

Manitoba, Canada

Prof. Cha's essential interest includes the development of advanced deep learning methods for smart sustainable structural systems using advanced structural health monitoring system and control technologies

Dr. Cha is a tenured Associate Professor in the Department of Civil Engineering at the University of Manitoba, and he was listed as top 0.45% cited scientist in the Civil Engineering field and top 2% cited scientist in all areas of science and engineering in 2021 based on Mendeley Data. Previously, he served as a Postdoctoral Associate position in the Department of Civil & Environmental Engineering at the Massachusetts Institute of Technology (M.I.T). He received his Ph.D. in structural engineering from Texas A&M University, College Station, Texas in 2008.

Research Interests:

His main scientific research interests are categorized as self-monitoring, healing, and controlling multi-functional sustainable structural systems.

Consequently, the following are possible areas of research:

Deep Learning-based structural health monitoring (SHM) for sustainable civil structures

Deep Learning-based engineering problem solving

Deep Learning-based smart structure design and control

Autonomous navigation of unmanned aerial vehicles for SHM

Automation of civil engineering problems.

Nonlinear system identification based on Bayesian recursive estimation

Unsupervised approaches for damage detection using deep learning.

Optimal sensor distribution of wireless sensors for SHM

Structural modal updating based damage detection

Passive, active, semi-active, and hybrid control for sustainable high-rise building and bridges subjected to multi-hazardous loads to improve resiliency and reliability

Effective performance-based design for multi-hazards (i.e., wind, seismic, blast, and impact) of high-rise buildings and bridges

Large-scale real-time hybrid testing of civil structures for natural or man-made hazards

Structural dynamics and nonlinear model and seismic design and analysis

Self-monitoring, self-healing, and self-controlling structural units for sustainable infrastructures

Dr. Anand Kishore Kola

Professor & Former, Department of Chemical Engineering

National Institute of Technology, Warangal, Telengana

Education:

•Ph.D in Chemical Engineering from National Institute of Technology, Warangal, Telangana

•Master of Business Administration (MBA) in Human Resource Management (HRM) from DDE, Pondicherry University, Pondicherry.

•Master of Arts (M.A) in Sociology from SDLCE Kakatiya University, Warangal, Telangana.

•Bachelor of communication and Journalism (BCJ) from SDLCE Kakatiya University, Warangal, Telangana

Research Interests:

Environmental Engineering, Energy, Advanced Separation processes, Modeling, Simulation and Optimization, Biochemical Engineering, Waste water treatment, Membrane separations, Reactive distillation, Inverse fluidization, Pharmaceuticals and nanotechnology.

Teaching & Research Experience:

Twenty two years of experience in teaching different Chemical Engineering courses and Research since 26.02.1999 to till date at the Department of Chemical Engineering, National Institute of Technology (Formerly Regional Engineering College) Warangal, TS, India

Prof Dr Munaz Ahmed Noor

Bangabandhu Sheik Mujibur Rahman Digital University (BDU)

Telangana, IndiaDhaka, Bangladesh

In the history of the Bangali Nation, the historic 7 March speech is an unforgettable event. In this day, our Father of the Nation, Bangabandhu Sheikh Mujibur Rahman, declared two significant things. He declared the independence of Bangladesh and economic emancipation. We got our independent Bangladesh after nine months of independence war under his leadership. However, our economic liberation, which is his Sonar Bangla, couldn't be achieved in his hands as he, along with his many family members, was brutally killed on 15 August 1975. Now, the daughter of the Father of the Nation, our Honorable Prime Minister Sheikh Hasina, is fulfilling her father's dream to create Sonar Bangla, which, in her words, is "Digital Bangladesh," whereby we will become a middle-income country by 2021 and a developed country by 2041. Now, this newly established "Bangabandhu Sheikh Mujibur Rahman Digital University," based on its name, has both Bangabandhu and Digital Vision. This is why this university is vital to the Bangali Nation. Bangabandhu Digital University (BDU) has the mandate to establish, sustain, and support the Digital Bangladesh vision. This is a significant and challenging responsibility for all the staff members, faculty members, and students of this university. This digital university should retain the heart of a traditional university while at the same time will embrace new tastes, new literature, and new values. I am grateful to our Hon'ble Prime Minister for entrusting me with this immense responsibility. The vision of this digital university is to become the world's leading teaching, learning, and research universities in science, technology, and engineering. Our mission is to reduce the skills gap that exists between the industry and academia. We would like to produce competency-based human resources so that they can immediately contribute to nation building after graduation. Students preparing for the digital age must have an understanding of the basics of STEM. Our vision is to create an online learning platform for all citizens of Bangladesh. Everybody should be in the workforce. With this online platform, learning will be individualized and may provide more choices for the citizens who, in the past, had only limited choices. This will not replace the traditional classroom but enhance it. We need to promote education that teaches reason, values, analysis, and even invention. Future workers should be flexible, inventive, creative, and able to work in teams. The future is limitless, but to reach it, we need new concepts of education, learning, and teaching. This digital revolution will sweep away all the old darkness and old practices. We cannot fight it, but we can adapt to it. It is a new age, and it is time for us to acknowledge the value and idea of a digital university

ICCEASI -2022

2nd International Conference on Civil Engineering, Architecture and Sustainable Infrastructure

Virtual Conference, 09th – 10th February, 2022

Organizing Committee

Chief Patron

Mrs. Alka Das
Hon'able Chairperson
Babu Banarasi Das Group, Lucknow

Patrons

Mr. Viraj Sagar Das
Hon'able President
Babu Banarasi Das Group, Lucknow

Prof (Dr.) Arun Kumar Mittal
Hon'able Vice Chancellor
Babu Banarasi Das University, Lucknow

Steering Committee Chair

Prof. (Dr.) Omprakash Netula
Head, Department of Civil Engineering
Babu Banarasi Das University, Lucknow

Steering Committee Members

Mr. Faraz Khan
Assistant Professor
Babu Banarasi Das University, Lucknow

Mr. Ankit Verma
Assistant Professor
Babu Banarasi Das University, Lucknow

Mr. Bilal Siddiqui
Assistant Professor
Babu Banarasi Das University, Lucknow

Mrs. Neeti Mishra
Assistant Professor
Babu Banarasi Das University, Lucknow

Convenors

Mr. Mohd Afaque Khan
Assistant Professor
Babu Banarasi Das University, Lucknow

Mr. Kamal Nabh Tripathi
Assistant Professor
Babu Banarasi Das University, Lucknow

International Advisory Committee Members

DR Deepak Waikar
Founder And Managing Partner, Engineering
Eduenergy Consultants LLP & University Of Newcastle
Singapore, Asia

Dr.Prachand Manpradhan
Dean, Civil Engineering
School of Engineering, Manmohan Technical University
Nepal, South Asia

Masoud Taghavi
Head, Mechanical / Energy Engineering
Technical and Vocational University (TVU)
Iran, Middle East

Mohammed J K Bashir
Associate Professor & Head, Environmental Engineering
Faculty of Engineering and Green Technology (FEGT)
MALAYSIA, Asia

Bevian Lsmail Abdulwahab
Lecturer, Civil Engineering
University of Technology
Iraq, Middle East

Dr Ferhad R Karim
Lecturer, Civil Engineering
College of Engineering
Iraq, Middle East

National Advisory Committee

Dr Manish Sakhlecha
Professor, Civil Engineering
ICFAI University
Tripura, India

DR V Selvan
Head Of Department, Civil Engineering
Kumaraguru College of Technology
Coimbatore, India

Mr Pravin M Thorat
Head Of Department, Civil Engineering
Suman Ramesh Tulsiani Technical Campus-Faculty of Engineering
Maharashtra, India

Dr. Snehal Abhyankar
Associate Professor And Head Of The Department, Civil Engineering
Wainganga College of Engineering & Management, Nagpur, India

Shamsher Bahadur Singh
SENIOR PROFESSOR, Civil Engineering
Birla Institute of Technology & Science
Rajasthan, India

Dr. R. Gopalakrishnan
Professor, Civil Engineering
Easwari Engineering College
Chennai, India

Dr.S.Govindarajan
Professor, Structural Engineering
Aditya Engineering College
Andhra Pradesh, India

Dr. Pradeep Kumar
Professor, Civil Engineering
Harcourt Butler Technical University
Uttar Pradesh, India

Dr.P.Oliver Jayaprakash
Professor, Civil Engineering
Sethu Institute of Technology
Kariapatty, India

DR. Rahul V. Ralegaonkar
Professor, Civil Engineering
Visvesvaraya National Institute of Technology
Maharashtra, India

Dr.G.Prabhakaran
Professor & Dean, Civil Engineering
Siddharth Institute of Engineering & Technology
Andhra Pradesh, India

DR.R.Kumutha
Professor & Head, Civil Engineering
Sri Venkateswara College of Engineering
Sriperumpudur, India

DR.T.Phani Madhavi
Professor, Civil Engineering
Bapatla Engineering College
Andhra Pradesh, India

Dr. M. Murali
Professor, Civil Engineering
Raghu Engineering College
Visakhapatnam, India

Dr S. Ganapathy Venkatasubramanian
Professor, Environmental Management
ANNA UNIVERSITY
Chennai, India

DR. B. N. D. Narasinga Rao
Professor & Head, Civil Engineering
Anil Neerukonda Institute of Technology and SciencesAndhra Pradesh, India

CONTENTS

CONTENTS

CONTENTS

CONTENTS

CONTENTS

CONTENTS

CONTENTS

ICCEASI - 22

2nd International Conference on Civil Engineering, Architecture and Sustainable Infrastructure

Virtual Conference

09th – 10th February, 2022

ABSTRACTS

ICCEASI -2022

Organized by:

Babu Banarasi Das University, Lucknow

In Association with

Institute For Engineering Research and Publication (IFERP)

Characteristics of High-speed Asphalt Pavement Deflection Basin under Different Structural States

Jianwei Fan, School of Transportation, Southeast University, Nanjing 211189, China
Yajing Zhu, School of Transportation, Southeast University, Nanjing 211189, China

Abstract:--

In this paper, the three-dimensional viscoelastic-elastic finite element (FE) models of semi-rigid base asphalt pavement were constructed and optimized. Based on the geometric characteristics of high-speed deflection basin, four indexes of deflection peak (d_p), deflection basin area (DBA), normalized lag area ratio (NLAR) and symmetry difference (SD) were proposed. The variation of the above four indexes under different parameter combinations were obtained, and the correlation between the indexes was studied. The results show that the vehicle speed of the high-speed deflection tester has a significant impact on the four indexes above, which may even exceed the impact of the conventional layer structure and interlayer bonding deterioration state on the four indicators. d_p and DBA are positively correlated with the deterioration of asphalt pavement, cement stabilized macadam base, subgrade and interlayer bonding. However, for NLAR and SD indexes, the deterioration of different layers and interlayer bonding state has the opposite effect. There is a high correlation between d_p and DBA, NLAR and SD. The research results provide reference for the characteristic analysis of high-speed deflection basin and the inversion of pavement parameters based on high-speed deflection basin.

Keywords:

asphalt pavement; subgrade; high-speed; deflection basin; structural states

Inner Dimension Detection of Open and Buried Crack in Asphalt Pavement Based on Rayleigh Wave Method

Yajing Zhu, School of Transportation, Southeast University, Nanjing 211189, China
Jianwei Fan, School of Transportation, Southeast University, Nanjing 211189, China

Abstract:--

In this paper, finite element (FE) models were established to research the propagation of Rayleigh wave in asphalt pavement. Based on the propagation characteristics of Rayleigh wave in pavement with cracks, displacement attenuation method and time difference method were put forward to obtain the inner morphology including depth and angle of three different cracks including visible vertical crack, visible inclined crack and invisible vertical crack. In-site testing were conducted to verify the effect of the methods. The viscoelastic property of asphalt pavement can be eliminated by detecting in low environment temperature, while the attenuation correction method was put forward to reduce the influence of heterogeneous property in on-site detecting. The results show the feasibility of detecting the cracks in asphalt pavement by Rayleigh wave tester on theory. For slender vertical cracks , the crack width and length have little influence on the values on DAC-ND curve. When DAC value is 0.1, the wavelength corresponding to the center frequency of Rayleigh wave basically equals to the crack length. For invisible vertical crack, DAC-ND curves obtained by changing h_cs and changing center frequency f are basically coincidence when DAC value is lower than 0.8. Time difference method shows high accuracy in the testing of visible inclined crack in isotropic elastic pavement medium, and the error of calculated crack length and angle are lower than ±10%. The attenuation correction method put forward in this paper decrease the influence of heterogeneous viscoelastic characteristic of asphalt mixture layer on the crack testing results.

Keywords

open crack; buried crack; detection; asphalt pavement; Rayleigh wave

A Review on Dynamic Analysis of Outrigger Systems in High Rise Building against Lateral Loading

Vandana Kushwaha, M.Tech 2nd Year (SE), Babu Banarasi Das University
Neeti Mishra, Assistant Professor, Department of Civil Engineering, Babu Banarasi Das University

Abstract:--
In this research dynamic analysis of outrigger system was carried out for a 60-storey building having an overall height of 180 m. First of all, comparison of performance between single and multi-outrigger was drawn, then analysis was carried out on different outriggers such as X, V, Inverted V and shear wall. Outriggers were placed according to Taranto theory i.e. (1/n+1), (2/n+1), (3/n+1), (4/n+1) … (n/n+1) of height [30]. Frame with only shear wall core and other outrigger models were analysed in ETABS software and different parameters as Maximum Story Displacement, Maximum Story Drift and Story Shears was compared. By analysing all the models by dynamic analysis for Earthquake Load (Response Spectrum) and static analysis for Wind Load it was concluded that structure becomes more resistive to lateral load with increase in no. of outriggers. Between X, V and inverted V type steel outrigger, inverted V is most effective but when shear wall was used as an outrigger, it gave better results than steel outriggers. Also belt trusses or shear bands increases the effect of outriggers even more.

Keywords
Outrigger System, ETABS, Dynamic Analysis, Static Analysis, Lateral Load

A State-of-Art Review of Dynamic Analysis of Piping System Subjected to Seismic Excitations

Jagruti Divakar Patil, Research Scholar, Department of Civil Engineering, MIT School of Engineering, MIT-ADT University, Pune, India
Prof. Dr. Kishore Ravande, Principal and Professor, MIT School of Engineering, MIT-ADT University, Pune, India.

Abstract
Pipe racks are a prominent feature in any industrial project since they carry piping. In petrochemical, chemical, and power plants, structural steel pipe racks are often the structures that support pipes, power cables, and instrument cable trays. Pipe racks transport process lines on lower levels and utility lines on higher levels. On the utility level, instrument and electrical trays are merged. On the pipe rack, there are many sorts of pipes. Utility pipes, which include steam, cooling water, extinguishing water, fuel oil, and so on, are often found in the center of a one-level pipe rack or on the top level when there are multiple levels. Then there are the process pipelines, which transport the product of the chemical reaction. When there are numerous levels, these are installed on the outside of the utility pipes (especially if they are heavy) on the bottom level. Finally, relief and flare pipes have a purpose in terms of safety. They are always situated on the outside of the rack and prevent the installation from getting subjected to excessive pressure. A pipe support is a structural element that transmits the load from a pipe to the supporting structures. The load consists of the weight of the pipe, the content carried by the pipe, any pipe fittings attached to the pipe, and the pipe covering, such as insulation. The overall design configuration of a pipe support assembly is determined by the loading/operating circumstances and the position of the pipe support. As a result, each design necessitates its analysis and computations. This study examines the pipe system in a refinery or power plant subjected to seismic excitations and performs a full dynamic analysis involving the estimation of natural frequencies, combinations of modal responses, and piping system compliance. A BRB prototype model will be created to bridge the gap between laboratory and in-situ tests. This study provides a critical review of the pipe rack system and its dynamic analysis.

Index Terms
pipe racks, structural element, support assembly, seismic excitations, BRB

Dealing with SATURATED ZONE (Aquifer/Water Pocket) & GROUNDWATER INFLOW in Urban Tunneling With TBM

Kshitij K Dhawale, Research Scholar (PG), School of Civil Engineering, Dr.Vishwanath Karad MIT World Peace University, Kothrud, Pune.
Dr. Ganesh Ingle, Associate Professor, School of Civil Engineering, Dr.Vishwanath Karad MIT World Peace University, Kothrud, Pune.

Abstract:--
The construction of tunnels and underground structures in urban areas has got rapidly dévelopment in recently years. Construction of the tunnel is a very serious engineering project addition to such a large amount of cost investment and the challenges are very common aspect towards the saturated type of geology. However, with the development of tunnel construction and modern technology, the risks factor of tunnels has become steadily important, because any unfavourable and disadvantageous geological condition may ascendancy towards the safety of the tunnel, surface structures, loss of life's, cost of project and time. It is noticed that the worst disasters in the history of tunnelling are due to the saturated zones and most recently the disaster happened in Kolkata Metro in August 2019. The Tunnel Boring Machine (TBM) was hit to an aquifer at "Bowbazar" in Kolkata East-West metro construction which leads to the tremendous amount of destruction to the tunnel, surface buildings and few human life also.
In the present study, the effect of the aquifer (water pocket) on the surface settlement during tunnelling is considered and the analysis is carried out for the situation in urban tunnelling with TBM. The effect of aquifer on the surface is studied in three stages of tunnelling construction Viz. before Incident, during Incident and after the incident. The surface settlement analysis of idealistic tunnel considering the effect of water pocket is carried out by finite element analysis software namely RocScience (RS-2) and the results are compared with the analytical equations suggested by various theories. It is found that the tunnel surface settlement results predicted by Rockscience software are comparable with the analytical equations.

Index Terms
Saturated Zone, Aquifer, Water Pocket, Urban Tunnelling, TBM, Settlement, Surface Displacement, etc.

Analysis and Design of Pre - Engineered Steel Building for Airbus A-380 Hangar Using Is Codes

Mohammed Moiz, Research Scholar, Department of Civil Engineering, School of Engineering and Technology, Career Point University, Rajasthan, Kota, India
Mohammed Ahmed Hussain, Research Supervisor. Department of Civil Engineering, School of Engineering and Technology, Career Point University, Rajasthan, Kota, India.

Abstract:--
The pre-engineered steel framed structure is a structure that includes a structural frame, roofing system and wall supports which is going to be design by the structural engineers either manually or by practicing software's. In the pre-engineered structural system all the structural members are made in the manufacturing agency itself after submitting design details only then all the members are conveyed to the site and get erected. In olden days the materials such as concrete, stone masonry, and brick masonry and wood had widely been used in the construction industries but it was found uneconomical and was consuming more time for execution or completion of construction work and was occupying more space for the construction of industrial structure, ware houses, residential building, car showrooms, workshops, garages, laboratories, function halls, cinema halls, stadiums, railway platforms, foot over bridges, aircraft hangars etc.when pre-engineered steel framed building concept was introduced during 1960's and it is abbreviated as PEB'S then it was found economical ,light weight structure and was taking less time for erection process. The pre-engineered framed structures are built to perform some important functions, the first function is to enclose a space for storing goods aircrafts or any other material and creating comfortable environment and protecting the storage items with natural forces of gravity, wind forces, and rain. In this research work a hangar for airbus A-380 has been designed for maximum span of 120M and width of 115M and a height of 30M as a pre-engineered framed structure. For designing the structural members staad pro (V8i) software has been used. This structural design is in accordance with the specification of the general construction in steel confirming to IS:800-2007 (limit state design) and wind application as per latest code confirming to IS:875-2015 (part-III) and earthquake analysis has been done as per IS-1893-2016 (part-IV). In this research work structural design details, connection details have been produced and also the dimension for air bus A-380 are being considered as 73M in length,79.8M in wing span and 24.1M in height.

Keywords
Pre-Engineered Building (PEB), AirCraft Hangar, Air Bus A-380.

Measurement and Evaluation of Indoor Work Environment in an Industrial Environment

Dharmendra Jariwala, Research Scholar, Department of Civil Engineering, Sardar Vallabhbhai National Institute of Technology, Surat- 395007, Gujarat, India
Robin Christian, Professor, Department of Civil Engineering, Sardar Vallabhbhai National Institute of Technology, Surat-395007, Gujarat, India

Abstract:--

Indoor work environmental condition refers as the air quality as well as working condition at any place whether residential, commercial or industrial. Indoor work environmental conditions are significant because they can affect the comfort, health, and performance of workers. Workplace environmental condition is assessed by measuring various comfort and pollution parameters. The textile printing industry extensively uses water, heat, and chemicals to produce finish product. Seven parameters responsible for comfort and health were considered in this study are dry bulb temperature, globe temperature, natural wet bulb temperature, wet bulb globe temperature index, relative humidity, total volatile organic compound, and formaldehyde. These parameters were observed at five locations, namely the jet dyeing machine area, stenter machine area, printing machine area, looping machine area, and washing basin area. Principal component analysis (PCA) is a multivariate statistical technique used for evaluating the relationship between various studied parameters. Biplot obtain from the varimax rotation showed which parameters are responsible for the indoor air pollution at locations. PCA was performed using the XLSTAT 2020 add-in. The results revealed that water, high temperature, and chemicals were the major sources of indoor air pollution. Better environmental condition can be achieved if pollutants are dispersed quickly in the surrounding environment by using effective ventilation systems.

Index Terms

Indoor work environment, Industrial environment, Hot and humid climate, Comfort parameters, Volatile organic compound

Vibration analysis of composite beam with shear flexible interface

Prashant kumar, National Institute of Technology Patna
Dr Ajay kumar, National Institute of Technology Patna

Abstract:--
One-dimensional finite-element models based on higher-order beam theory are used to study the dynamic behavior of composite beams with partial interaction. Additionally, a transverse shear deformation of a beam is taken into consideration in the model. It is assumed that the axial displacement of fibres across the beam depth is cubic and has a parabolic variation in shear stress, which disappears at both the top and bottom fibres. Owing to parabolic variation in shear stress no shear correction factor required in the present model. Suitable validation is done by comparing present model findings to those found in the scientific literature. Because of very few published results on composite beam dynamic response based on higher-order beam theory, several novel findings are made. The results reveal that the finite-element beam performs exceptionally well in forecasting the free vibration response of composite beams under a variety of boundary conditions and loading, including the moving loads.

Analytical study of seismic behaviour of Composite structure of industrial building Using STAAD Pro V8i

Bapan Debnath, Civil Engineering Department, Techno India University , Kolkata , India
Dr Suman andey, Civil Engineering Department, Techno India University , Kolkata , India

Abstract:--
Composite structures are those which are made of combined concrete and steel material. Presently this concept has received worldwide acknowledgment in area of construction. However, this system is relatively new for the construction industry. The utilization of steel in development of industry is extremely low in India, as compared with other developed nations and neighborhood countries. There is an extra ordinary high potential for expanding the use of steel particularly in the developing country like India. RCC structures are no longer economic because of increased dead load, less stiffness, and decay formwork whereas steel structures are good for low load consideration. However, combination of Steel concrete in form of composite frame system can provide even better effective and economic solution to most of the problems related with medium to high rise structures.
In this paperwork, composite structure has been considered for the study of Industrial building which is situated in earthquake zone-VI (according to 1893-2002 earthquake loading). Static method of analysis has been used for modeling of composite structures using STAAD-pro V8i software. After complete analysis and design for seismic load, important results like base shear, storey shear, bending moment have been drawn and discussed for future reference.
In the composite structure Steel column is encased in RCC slab on steel girder are employed. The dead load and live load are considered as per IS-875(part-1&2) and wind load is considered as per IS-875(part-3). The critical bending moment and Shear force values are less in composite structure compared to RCC structure and more than steel structures due to decreased dead load which is the best solution for the making Industrial Structure compared to RCC and Steel type structure.

Traditional Brick Masonry Wall and Wall made by AAC Block- A comparative Study considering state Tripura

Ashim Paul, ICFAI University Tripura
Dr. Manish Sakhlecha, ICFAI University Tripura

Abstract:--
In the present practice of multistory building construction, skeleton structure are made of RCC moment resisting frame. Such type of structure does not allow any infill wall to be transfer the load into the ground. Self weight of the infill wall is carried by the RCC beam and it is to be transfer to the foundation through RCC column. It will be more economical, if infill wall consist of more lighter and durable materials.
More useful traditional brick masonry wall consists of clay brick having size 250 x 125 x 75 mm with jointing materials 1: 4 cement mortar 10 mm thick. But day by day the uses of such type of masonry are disseminating due to it's over cost. A new Autoclave Aerated Concrete (AAC) block has been introduce which is lighter weight and most economical than the traditional clay brick masonry. Due to its proper shape cost of plastering and joining materials became very less than the tradition brick masonry.
This study includes the different properties of traditional clay brick and AAC block. This paper also deals with the comparison of clay brick infill wall and AAC infill wall for two or multistory building. Considering Tripura region AAC block will be more cost effective than the traditional clay brick.

Reservoir water-spread area estimation using microwave satellite data

V.S.Jeyakanthan, Scientist, Deltaic Regional Centre, National Institute of Hydrology, India
R.Venkataramana
J.V.Tyagi, Director, National Institute of Hydrology, India.
Y.R.Satyaji Rao

Abstract:--
Optic remote sensing provides information on elevation contours, in the form of water spread area of reservoirs, which is the only thematic information required to assess the sedimentation in a reservoir. However, due to the presence of cloud in the optic satellite data during monsoon and other extreme weather conditions it cannot be used. To overcome this situation microwave satellite data (Sentinel 1-SAR) is used on Hirakud reservoir wherein, most of the year it is covered by clouds. For the year 2015, six SAR pass were available between the water level 181.23 m (near MDDL) and 190.19m (near FRL). The pre-processing techniques were applied to all the six SAR, dual polarized data. The VV+VH data thresholiding methodology was utilized to identify the water pixels. It was found that the water pixels contain values ranging from -39.43db to -19.82db, these pixels were extracted and the water spread area occupied by all the six SAR data were estimated. This study shows that reservoir water spread and in turn the amount of sediment deposited in a reservoir are can be effectively estimated using Sentinel1-SAR, which is a replacement to the cloud covered optic data.

Keywords:
Reservoir sedimentation, Water spread area, Synthetic Aperture Radar (SAR), Sentinel-1A.

Evaluating the impact of climate change on construction workers productivity and safety

Mohd Amaan Alam, Integral University, Lucknow
Mohd Asim, Integral University, Lucknow
Abu Zaid, Integral University, Lucknow

Abstract:--
The environmental change represents a danger to construction workers' endurance, and worldwide endeavors are important to battle rising temperatures and the impacts of environmental change on development laborer wellbeing. Uttar Pradesh with an enormous casual area labor force and exceptionally actual positions oftentimes done under blistering temperatures with deficient security guidelines might see more prominent impacts of environmental change on specialist wellbeing. This study was led to inspect the effect of environmental change on the wellbeing and usefulness of laborers. Work motion study is carried out. Two primary data sets, PubMed and ScienceDirect, and other writing sources were counseled to observe fitting articles on environmental change and its related wellbeing and security impacts on specialists in non-industrial nations. Terms, for example, 'environmental change', 'a dangerous atmospheric deviation, 'surrounding heat', 'sun heat', wellbeing and security, 'wellbeing', 'laborers', 'agricultural nations' and 'low-and center pay nations' were among the pursuit things.
What's more, diminished work limit in heat-uncovered positions will proceed to rise and obstruct financial and social improvement in U.P state. There is a pressing requirement for additional investigations around the wellbeing and financial effects of environmental change in the work environment, particularly in tropical emerging regions, which might direct the execution of the actions expected to resolve the issue.

Simulation Analysis for Different Arrangements of Piers Using Ansys

Anusha Minnapuram, PG student, Department of Civil Engineering, University College of Engineering(A), Osmania University, Hyderabad
Prasanna S V S N D L, Associate Professor, Department of Civil Engineering, University College of Engineering(A), Osmania University, Hyderabad

Abstract:--
Scour is the process of erosion caused by water on the soil nearby any hydraulic structure. Scouring phenomenon is a very complex problem as many parameters such as flow depth, velocity, shape of pier, size of pier, types of bed materials etc. control the scouring. The formation of the scour hole changes the flow pattern causing a reduction in shear stress by the flow and a consequent reduction in the sediment transport capacity. However, the stronger flow increases the scouring rate as compared to weaker flow field. The void or depression formed around the pier, as sediment is carried away from the river bed is called as scour hole. Many studies have been conducted by various researchers using extensive laboratory works around flow structures with the help of scaled models. Further, most of the work is oriented by physical modelling estimating the scour around an isolated bridge pier. The work around a group of piers is relatively much lesser. In the present study, simulation studies were carried out for complex pier system. The numerical simulations were carried out for two different arrangements via., Tandem and Lateral arrangements. The analysis focused on the evaluation of the effect of spacing via., 33 mm, 66 mm and 132 mm and estimation scour using ANSYS- CFD. Further, the study was also evaluated to plot the flow scenario around the bridge piers. The results evaluated from the numerical simulation showed good agreement with the physical modelling analysis.

Keywords:
Scour, Lateral, Tandem, ANSYS-CFD, k-Epsilon

Nagavali River Basin Flash Flood Simulation Model

R. Venkata Raman, Delatic Regional Centre, National Institute of Hydrology, Kakinada – 533 003, India
V.S. Jeyakanthan, Delatic Regional Centre, National Institute of Hydrology, Kakinada – 533 003, India
Y.R. Satyaji Rao, Delatic Regional Centre, National Institute of Hydrology, Kakinada – 533 003, India

Abstract:--
Nagavali river basin is one of the important east flowing rivers between Rushikulya and Godavari in Odisha and Andhra Pradesh states in India. The river originates from thehill near Lakhbahal village in Thuamul Rampur block in Kalahandi District and Kalyansinghpur in Rayagada district in Odisha and travels for a distance of about 256 km. the total catchment area of the river basin is 9205 sq.km. The length of Nagavali river 161 km in Odisha and the remaining 95 skm in Andhra Pradesh and lies within the geographical co-ordinates of 180 30' to 190 30' north latitudes and 830 00' to 840 00' east longitudes. Nagavali river is a non-perennial river and heavy flood in the river during 2006 monsoon season over the period of 50 years (1971-2020) and the river was over flooded which caused lots of losses either economic. In this paper, the methodological approach was adopted, focused on the hydrologic modelling through the Hydrologic Engineering Centre Hydrologic Modelling System (HEC-HMS) and the hydrodynamic modelling with Hydrologic Engineering Centre River Analysis System (HEC-RAS). The aim of this study was flood inundation behaviour of Nagavali river basin during extreme flood event in 2006 year. 2-D HEC RAS model was simulated by using output results of HEC HMS runoff depth/excess rainfall and simulated results of Srikakulam GD station (R2 is 0.625) are well match with observed data. Flash flood model is very useful for flood warning system by generating pre-flood inundation maps and decision makers.

Index Terms
Flash Flood, Rainfall, Model, Runoff, Simulation

Role of Mushroom in Decolorisation of Dyes-A Literature

Ashwini Modi, Shri Vaishnav Vidyapeeth Vishwavidyalaya Indore, India
Dr. Aanand Babu. K, Shri Vaishnav Vidyapeeth Vishwavidyalaya Indore, India

Abstract:--
Pollution of soil, water, and air by hazardous substances is a major environmental problem in today's world. Eating mushrooms has become a tradition among many people because of its richness in flavor, protein, and medicinal value. But its ability to reduce the risk of harmful substances and dyes by extracting various enzymes or by absorbing and dyeing the material has made it attractive to use in the field of bioremediation. Mushroom fungi are well-known for their ability to destroy various agricultural pests. These fungi can damage a wide range of persistent toxic pollutants and insoluble chemicals such as lignin. Fungal biomass also showed excellent color-removal capabilities. The various biochemical mechanisms underlying dye extraction include fungal degradation methods using pure enzymes or biosorption. Mushrooms act as a good fungus as they degrade cellulose and plant lignin to grow and develop. It also preserves the health of the soil by playing the role of hyper accumulators. This chapter focuses on biodegradation / dye extraction based on dye mushrooms and pollutants extracted from various industries or other sources. It also highlights the possible mechanisms involved in mushroom-based damage and dye removal as well as their latest achievements, advances, and future.

Keywords
Decolonization, Bioremediation, Biosorption, Degradation, Agrochemicals, Biodegradation

Potential of Elderly Housing in India A Post Pandemic Scenario

Dr. Venu Shree
Akash Pandey
Sadasivuni Pavan Kalyan

Abstract:--
In developing countries, the health care system faced serious problems during COVID-19 outbreak making difficult for elderly groups to get their own medication and the care they required. Elderly people are more already having underlying conditions such as cardiovascular disease, diabetes, or respiratory illness — comorbidities that we now know raise the risk of severe COVID-19 and COVID-19-related death. Additionally, a likely weaker immune system makes it harder for elderly people to fight off infection. As a result, the impact on elder groups is notable. According to World Health Organization (WHO) data from April 2020, more than 95% of COVID-19 deaths were among people over 60 years of age, and more than half of all deaths occurred in people of 80 years-plus. The ageing of the population already has led to staffing shortages in care and delay in capacity expansion showing that demand exceeds availability resulting in waiting-lists. On the other hand, elderly people increasingly want and demand a more varied provision of health care services at home so they can age in their familiar home environment as long as possible. This paper aims to find out the potential of elderly housing in the country post pandemic.

Keywords
Sustainable Housing, Elderly Housing, COVID-19

Analysis of Damaged Cables of Cable Stayed Bridges – A Review

Aarsha A Degvekar, Post graduate student, Goa Engineering College, Farmagudi
Dr. Purnanand P. Savoikar , Professor, Goa Engineering College, Farmagudi

Abstract:--
Cable stayed bridge has turn out to be one of the most frequently used bridge system all over the world due to their structural efficiency, ease of construction and aesthetic appeal. Cable stayed bridge consists of 3 major structural components namely, pylon/ tower, deck system and cable system supporting the deck. In cable stayed bridge, the dead load and live load on the girders are transferred to the towers by the axial action of inclined stay cables. Stay cables provide intermediate support to the girder so that it can span a long distance. The stay cables are made of high- strength steel wires. During last ten years, detailed inspection of cable-stayed bridges has reported severe damages in cables such as rupture of protective coat, rust and fatigue damages which have effect on the safety and service life of the bridge. In some cases the damage is so acute that it becomes pertinent to replace the existing cables. This paper reviews the various issues in analysis of damaged cables like reasons for damages to the stay cables and replacement of stay cables.

Keywords-
cable-stayed, pylon, stay cables, damaged cables, replacement of cables.

Procedure for enacting Smart Devices in the Construction Industry (U.P. region)

Mohd Asim, Assistant Professor, Department of Civil Engineering, Integral University Lucknow
Ankit Gupta, MTech Research Scholar, Department of Civil Engineering, Integral University Lucknow
Syed Aqeel Ahmad, Professor and Head, Department of Civil Engineering, Integral University, Lucknow

Abstract:--
The decentralization of data and high pace of portable substance access in the construction industry gives an ideal situation to progress of cycles by means of the execution of the worldview of the Internet of Things (IoT). Savvy gadgets are considered as the items interconnected in the IoT; subsequently they assume an essential part in the computerized change of the development business. Presently, there is an absence of rules with respect to the execution of shrewd gadgets for digitalization in the development business. Subsequently, this paper plans to give a bunch of rules to carrying out brilliant gadgets in the development business.
An exact review will be acted in the Lucknow (Uttar Pradesh). Following an efficient methodology, subjective information assortment and examination needs to perform dependent on semi-organized meetings including experts from development organizations in the Uttar Pradesh. The system sets up the elements, components and activities to be considered by construction organizations when carrying out brilliant gadgets.

Index Terms
Construction Industry, Smart Devices, Internet of Things, Procedure

Effect of varying temperature and crumb rubber content on properties of waste tyre rubber modified bitumen

L. K. Kokate, Research Scholar, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad (MS), India
Dr. R. M. Damgir, Associate Professor, Government College of Engineering, Aurangabad (MS), India

Abstract:--
More than 9 crore waste tyres are generated in India every year which is 6% of worlds waste tyre production. This is one of the most problematic source of waste creating serious environmental issue if left undisposed of unrecycled. Utilisation of waste tyre in construction of flexible pavement is one of the best possible option. Current study deals with the laboratory investigation of waste tyre rubber modified bitumen for five varying rubber content (5 %, 10%, 15 %, 20 % and 25% by weight of bituminous binder) at three different temperatures (175 ^{0}C, 200 ^{0}C and 225 ^{0}C). Crumb rubber was obtained through ambient grinding process whereas VG 30 grade bitumen was used as base binder. Experiments were carried out with reference to relevant guidelines provided by Indian road congress (IRC) and Bureau of Indian Standard (IS) codes. It was observed from this study that variation in crumb rubber content at different temperatures had significant effect on binder properties of bitumen.

Study of Behavior of Multi-Storied Building on Regular and Irregular Structure Subjected to Seismic Load with Different Zones

Deenay Ambade, M-Tech Student, Civil Engineering Department, YCCE, Nagpur
Vaishali Mendhe, Assistant Professor, Civil Engineering, Department, YCCE, Nagpur

Abstract:--
Seismic forces are unpredictable and irregular; hence there is a need to study the seismic analysis to design the earthquake resistance structure to ensure safety against the seismic forces. During an earthquake, the main reason for the failure of the building is plan irregularities of the building. In this study, the seismic analysis for the G+7 building is carried out for the different seismic zones (i.e., zone 2,3,4 and 5) and the different plan shapes (i.e., Rectangular shape, C-shaped, L- shape) by using STAAD.Pro software. The buildings are designed as per the IS 1893 (Part 1): 2016 for earthquake forces. The main objective of the paper is to compare the responses such as base shear, storey drift, and storey displacement of regular and irregular structures subjected to seismic load for different seismic zones.

Index Terms
Regular and Irregular, Seismic Analysis, Seismic zones, STAAD.Pro, Storey Drift.

Design and Analysis of High-Rise Buildings using Software

Mayur J, BTech Student, Department of Civil Engineering, PES University, Bangalore
Spandana Murthy, BTech Student, Department of Civil Engineering, PES University, Bangalore
Sagar B R, BTech Student, Department of Civil Engineering, PES University, Bangalore
S V Venkatesh, Professor and Chairperson, Department of Civil Engineering, PES University, Bangalore
Janardhana K, Assistant Professor, Department of Civil Engineering, PES University, Bangalore

Abstract:--
A high-rise building is outlined in terms of height reckoning on the jurisdiction. From the structural purpose of view, it may be defined as a building that may be affected by lateral forces ensuing from wind forces and earthquakes which will play a serious role within the method of design. As urban areas keep on extending, tall structures are a potential answer to stay up with the growth. In the present investigation, a residential G+20 building is chosen. Three different models are considered. These models differ based on the location of shear walls. The current study involves analyzing a high-rise building to find the displacements. The results of the investigation are utilized to check the wellness of the structure for use. A special structure is designed known as a shear wall for resisting lateral forces because of seismic loads and wind. P-Delta effect is a second-order effect experienced by any structure when subjected to lateral loads like earthquake or wind loads and is originated by an additional destabilizing moment generated due to the gravity load acting on the laterally deflected member further displacing it.

Index Terms
P-Delta effect, Shear Wall.

E-waste Characterisation, Management and Utilization in Construction Industry-A Review

Ingle G. S, Associate Professor MIT World Peace University, Pune, India
Nikhil Patkar, Research Scholar MIT World Peace University, Pune, India
Aswar D.S, Assistant Professor, Sinhgad College of Engineering, Pune, India

Abstract:--
Electronic waste (E-waste) is being generated in tremendous proportion all over the world. The safe disposal of this E-waste is a tedious task as it comprises harmful contaminants such as Lead, mercury Cadmium, Beryllium etc. These highly toxic pollutants are a great threat to human health and environmental pollution. The controlled reuse of this E-waste in the construction industry can certainly reduce the E-waste disposal issues and will indirectly preserve natural construction materials, energy. This will also safeguard and protect the environment from possible E-waste pollution.
The use of E-waste in construction materials within the appropriate proportion can prove eco-friendly and economical. The E-waste ingredients can be used for the preparation of lightweight concrete. The E-waste may be utilized as a binding material, as a partial replacement for bitumen in the construction of flexible pavement. The E-waste material fibres can also be used effectively in the production of clay bricks, cement concrete Blocks. The research paper attempts to summarise the applications of E-waste in construction industries as an economically beneficial and sustainable alternative.

Index Terms
E-waste, Waste characterization, Management and Disposal Techniques, construction materials.

Characteristic Compressive Strength and Modulus of Elasticity of a Geopolymer Concrete

Suyog S. Pawar, M. Tech Student of Structural Engineering, Yeshwantrao Chavan College of Engineering, Nagpur
Prof. Vivek D. Jayale, Assistant Professor of Civil Engineering Department, Yeshwantrao Chavan College of Engineering, Nagpur

Abstract:--
Natural contamination is the most pressing issue facing the globe now. As a result of the industrial revolution. There is a massive release of ozone-depleting compounds (such as CO2) into the atmosphere. By increasing the use of modern results, we can reduce the impact of pollution on the environment. There comes a time when "GEO POLYMERS CONCERTE" is the concept. The entire cement content is 100% replaced with Fly ash, Silica flumes, and gypsum are being replaced. For material binding, alkaline liquids such as NaOH and Na2SiO3 are utilized. In experimental work low calcium (class F) fly ash has been used which has been supplied from Thermal Power Plant Koradi, Nagpur. **Sodium Hydroxide** in flake form NaOH with 98% purity and **Sodium Silicate Solutions (**Na2O = 14.7%, SiO2 = 29.4%, and water = 55.9%) were used as alkaline activators [25]. We chose the proportions 1:1.18:2.58 and 1:1:2, and we're using 8 M and 16 M of NaOH.
In this research paper we have worked on the Modulus of Elasticity and Compressive Strength according to the standard codes like Australian Standard (3600-2005), American Concrete Institute (ACI) committee 363 (1992) and Indian Standard codes.

Keywords
Modulus of Elasticity (Ec), Compressive Strength (fck), Class F Fly ash, Design Mix, 12 Molar Solution, Geopolymer Concrete.

Design of Fully Composite Load-Bearing Precast Concrete Sandwich Panels

Rohan Dasgupta, Anjuman-I-Islam's Kalsekar Technical Campus, New Panvel
Rajendra Magar, Anjuman-I-Islam's Kalsekar Technical Campus, New Panvel

Abstract:--
Precast concrete sandwich panels (PCSP) are made up of two or more concrete wythes with layer(s) of thermal insulation separating them which are held together with the help of connectors. They may be used merely as a cladding or can also be designed and built to act as load bearing walls, shear walls etc. Based on how the wythes and the connectors mutually resist the applied loads, PCSPs are classified into the following 3 types: i) non-composite panels, ii) partially composite panels and iii) fully composite panels. In the absence of any proper codes of practice for PCSPs, Precast/Prestressed Concrete Institute (PCI) has provided guidelines for the designing of fully composite panels. Moreover, many researchers have also carried out independent studies where they have reported the achievement of fully composite action in their designed panels. In this paper, a comparison between the designs of fully composite load-bearing panels has been made as per PCI guidelines with that of those reported by independent researchers. The parameters used for this comparison are ultimate load and deflection at failure. The PCI guidelines are found to be over-safe for most cases and hence a revision is recommended.

Index Terms
Fully composite, Load-bearing, Precast concrete, Sandwich panels

The Earthquake Resistant Structural Design of RCC Tall Chimney

Er. Shankar Debnath, MTech Student, Techno India University, Salt Lake City, West Bengal , India.
Dr. Arghya Ghosh, Assistant Professor , Techno India University, Salt Lake City, West Bengal , India.
Dr. Heleena Sengupta, HOD & Professor , Techno India University, Salt Lake City, West Bengal , India

Abstract:--
Chimneys are very important structure in our industrial age. In this field I work in RCC tall Chimney in earthquake zone V (five) and wind zone VI (Six). RCC Chimney is very strong and maintenance cost is low and longibility is very high. High strength concrete is used . The height of the RCC Chimney is 300 m which is very important for the environment point of view. The semi solid waste or various pollutant gas are discharged from a definite height of the chimney. The particular height of the Chimney is defined by the Environment Protection Act 1986 . The objective of this project is to study the change in the stress pattern due to presence of flue holes and also to carry out the influence of along wind and across wind effects on the height of chimney for different wind speed and location. The Earthquake resistant chimney is carried out by developing a three dimensional model created by using STADD Pro. The stress concentrations in the flue duct in the chimney have been studied and Calculation also be done in Excel sheet also A systematic plan on RCC tall Chimney in earthquake zone V (five) and wind zone VI (Six) in India effects on structures is presented in this paper.

A comparative analysis of different methods for the enhancement of internal curing of latex modified concrete with brick aggregate, nanoparticles of Al_2O_3, and cotton threads

Ramu Debnath, Assistant Professor, Civil Engineering Department, ICFAI University Tripura
Manish Sakhlecha, Professor, Civil Engineering Department, ICFAI University Tripura
Badrinarayan Rath, Assistant Professor, Civil engineering Department, Wollega University, Nekemte, Ethiopia

Abstract:--
The various techniques on the internal curing of concrete attract many researchers to develop high-performance concrete by minimizing self-desiccation and autogenous shrinkage of concrete. In many cases, it has been more challenging to keep the strength and durability of concrete in limit after introducing such techniques though it compensates water losses in concrete. The rate of water loss due to evaporation is significantly more in high humid areas or tropical regions. Therefore, conventional curing of concrete does not satisfy the hydration process of concrete to yield high strength because water does not reach uniformly to the core of concrete. Here the internal curing plays a crucial role in enhancing the durability of concrete. In this present study, brick aggregate is used as an absorbent where a specified dose of rubber latex is capable of sealing the concrete voids at a later age. In addition to that, cotton threads are pierced homogenously and heterogeneously through the concrete, which helps the brick aggregate to absorb water externally through it and store it inside. In this research, samples were prepared with homogenous and heterogeneous arrangement of cotton threads within the mould and tested for their compressive strength, flexural strength, and split tensile strength of concrete. It has been observed that the heterogeneous arrangement of cotton threads gives the best result.

Keywords:
Internal curing, Brick aggregate, rubber latex, cotton thread.l

Prospecting the barricades for administering construction waste trading practices in the construction industry of U.P, India

Mohd Asim, Assistant Professor, Department of Civil Engineering, Integral University Lucknow
Imran Abbas Naqvi, MTech Research Scholar, Department of Civil Engineering, Integral University Lucknow
Syed Aqeel Ahmad, Professor and Head, Department of Civil Engineering, Integral University, Lucknow

Abstract:--
The construction industry is a significant generator of waste, which has a high potential to yield a generous measure of waste into the economy as an important asset. Squander exchanging is a manageable procedure for further developing asset usage and changing the construction industry towards the round economy. This study aims to determine the barriers for implementing effective waste trading practices in the UP India (construction and demolition (C&D) sector).

Index Terms
Barricades, Construction and Demolition waste, Waste materials cycle, Waste management trade.

Seismic Response of Steel-Framed Buildings Resting On Hill Slopes

Mohd Asad Rehmani, PG Student, Dept. of Civil Engineering, VCTM, AKTU, U.P, India
Noorul Bashar, Assistant Professor, Dept. of Civil Engineering, VCTM, AKTU, U.P, India

Abstract:--
The purpose of this study is to examine how increasing the slope of the ground and the number of floors will affect the performance of a steel frame structure. The effect of two types of parameter changes is examined, namely the effect of increasing the number of floors from six, eight to ten and the effect of increasing the terrain slope from 0°, 10°, 20° to 30°. The ETABS 2018 software is used to do this seismic assessment of a steel-frame structure. The response spectrum analysis method with SRSS combination was used to evaluate all twelve analytical models that were exposed to seismic forces along and across the slope. The dynamic properties derived from the investigations were compared within the considered hill development plans with regard to fundamental time periods, maximum top storey displacements, storey drifts, and storey shear.

Keywords
Base shear, Response Spectrum Analysis, Seismic analysis, Steel-frame building resting on Hill-slopes, Top-storey displacement.

Application of Erp System for Implementation of Labour Welfare

Sachin Nalawade, Assistant Professor, Dr. D. Y. Patil Institute of Engineering, Management & Research, Pune
Dr. Atul R Kolhe, Associate Professor , Dr. D. Y. Patil Institute of Engineering, Management & Research, Pune

Abstract:--
Digitalization has become inseparable part of almost every sector of engineering. Construction industry is no more an exception to it. Today, construction industry depends on technology to enhance effective management of construction activities. Companies are using an information system that can handle massive workloads. This is where the Enterprise Resource Planning (ERP) system has come into picture. An ERP integrates different activities on one platform that shares one database. It enhances productivity and gives more profit to companies. The construction industry seems to be complex sector with vast labor intensity. Managing and monitoring this huge human resource has many barriers till present date. As such, many local and migrated labors in regular situation and in situation of COVID-19 pandemic outbreak have been deprived of the benefits of the Welfare Schemes promoted by the government because they are not aware about schemes, their migrated status and impediments in collection and handling of data. So there is requires technical solution for collection, manipulation and analyzing this data of labors to track the information of migrated workers and improve the implementation of schemes using HR module of ERP system will mitigate the difficulties faced frequently. This paper deals with the customization in HR module of ERP system which will help for better implementation of schemes and to serve as a link between government, workers and labor contractors to deliver all the schemes on grassroots. Eventually, a better human resource management is anticipated through this project work.

Index Terms
Migrated labor, COVID-19, Labor welfare schemes, ERP-Enterprise Resource Planning, HR module.

Static and Free Vibration Analysis of Multiscale Composite Plate Structure Using Reddy's HSDT Mathematical Model

Ravi Kumar, Civil Department, National Institutes of Technology Patna, Patna, India
Ajay Kumar , Civil Department, National Institutes of Technology Patna, Patna, India

Abstract:--
Present paper aimed to investigate the static and force-free vibration analysis of CNT reinforced multiscale FGM rectangular plate structure. A Reddy's HSDT model by considering zero transverse shear stresses at the top and bottom surface of the plate is used for the present formulation. A nine noded iso-parametric element containing 13 unknowns at each node is considered for finite element analysis. Using the Halpin-Tsai and homogeneous equation the effective material properties of the final material are obtained. The current result is first checked against a previously published result to validate the present formulation. The numerical results for the static and vibration analysis for the rectangular multiscale FGM plate are shown after verifying the formulation.

Keywords
Modified higher-order shear deformation theory, iso-parametric element, Multiscale FGM, static analysis, vibration analysis

Confirmation According to Several International Codes on the Perfect Compatibility of the Algerian Earthquake Regulations with the Seismic Base Isolation Technique of the Buildings

Ounis Hadj Mohamed, Department of civil engineering, University Mostepha Benboulaid, Batna, Algeria
Bezih Kamel, LGC-ROI, 2Department of Civil Engineering, University Mostepha Benboulaid, Batna, Algeria

Abstract:--
Base isolation is an innovative seismic design tool that provides protection for structures strong earthquakes and winds. A basic idea for this technique is to decouple the superstructure from catastrophic effects of strong ground motions by shifting the fundamental period of structure away from the dominant periods of ground motions. Therefore, several codes around the world have introduced chapters relating to the base isolation technique. After gathering a more information on building's codes of Japan, China, IBC2009, Italy, Taiwan, and following the cyclic seismic events in our country, it is essential to introduce this technique into the Algerian earthquake code. The aims of this paper suggest a new design approach for LRB type isolators (Lead Rubber Bearing) according to the Algerian seismic regulation, based on the equivalent static method, and it employs an iterative process that determines the isolator's displacement design depending on the mechanical and geometric characteristics of the building. For this purpose, a nonlinear dynamic analysis was performed for the various international building codes excited by accelerograms of different kinds. This new method was validated by a numerical modeling, which is a comparative study with several regulations in the world, this showed very satisfactory results in design displacement and shear force base, which agrees very well with the various regulation.

Index Terms
Base isolation, Lead Rubber Bearing, Algerian seismic code, Hysteresis behaviour

Geotechnical aspects of some earthen and gravity dams in India

Sajal Shirish Kamat, Post graduate student, Goa Engineering College, Farmagudi Goa
Dr. Purnanand P Savoikar, Professor, Goa Engineering College, Farmagudi Goa

Abstract:--
A dam is a barrier that stops or restricts the flow of water or underground stream and stores it for power generation, irrigation, domestic and industrial use. The dams can be made up of masonry, concrete or earthen dams. Several geotechnical issues like settlement, seepage, static and seismic stability need to be looked into while designing the dam cross section. These issues may also occur after the construction of dam including siltation and loss of capacity/useful storage for the dam. This paper reviews and discusses some of these geotechnical problems faced by some dams in India including the case study of dams in Goa. Salaulim Dam is major source of water for the entirety of South Goa and hence its stability is a major importance to the state. Anjunem dam is straight gravity type masonry dam of length 176 m and height of 42.8 m, provided with flip bucket type energy dissipation devices. This study investigates the settlement, seepage and storage issues for Anjunem and Salaulim dam in Goa

Keywords
Seepage; settlement; stability; Salaulim dam; Anjunem dam.

Robustness evaluation of a Nervi's masterpiece: the Autogrill Motta

A modern paradigm for conceptual design of structures

Valeria Gozzi, Associate professor, DACD - Department of Environment Constructions and Design, University of Applied Sciences and Arts of Southern Switzerland (SUPSI) - Researcher assistant, Academy of architecture, University of Italian Switzerland (USI)
Bernardino Chiaia, Professor, DISEG - Department of Structural and Geotechnical Engineering, Politecnico di Torino, Italy (PoliTo).

Abstract:--
The work of the Italian engineer Pier Luigi Nervi is well known internationally as a very good example of conceptual design of structures. He is considered a master of the most brilliant synthesis between architecture and engineering.
Nowadays, there is again strong attention onto the study of modern buildings and infrastructures to define a modern paradigm for conceptual design, according to the actual regulations and design approaches such as robustness and maintenance.
In this paper, we present a robustness analysis of the building "Autogrill Motta" on the A4 motorway (Limena, PD, Italy), designed by Nervi between 1965 and 1967. Based on the original design documentation, a finite element model of the building was implemented, according to the actual loading conditions and the modern codes on existing buildings. A parallel model developed with static graphic was performed, to reproduce an analysis more like to the one originally performed by Nervi.
Then, the robustness analysis was developed by considering the progressive failure of different tensioned rebars and/or concrete braces of the Vierendeel beams on the façade, with the aim of defining the ability of the structure to redistribute loads to the other components via the Alternate Load Path strategy. Results show the progressive failure analysis with different percentages of failure of tensioned rebars and concrete braces.

Index Terms—
robustness, historical structures, conceptual design of structures, Pier Luigi Nervi, Vierendeel beams, structural analysis, extreme event, damage.

Treatments and Conditioning Methods for Partial Removal of Clung Mortar in Recycled Concrete Aggregate – A Review

Shalaka Nirantar, Ph. D. Student, Department of Civil Engineering, Sandip University, Nashik, India
Premanand Naktode, Head of the Dept., Department of Civil Engineering, Sandip University, Nashik, India

Abstract:--
Due to scarcity of natural resources, partial replacement by recycled concrete aggregate (RCA) has become inevitable. But recycled aggregates cannot be directly used as replacement in the natural aggregate (NA) due to its poor physical and mechanical properties in the available form; presence of clung mortar being the main reason which increases porosity, water absorption, and reduces interfacial bonding between RCA and new cement paste and in turn its compressive strength. Therefore, RCA needs to be treated and conditioned to improve the characteristics before using it as a replacement. Treatments involves partial removal of clung mortar by presoaking in water, acids, followed by heating and mechanical processes. Surface conditioning by polymer infusion, coating of mineral admixtures, and carbon curing. This paper aims at studying various enhancement techniques used for improving the effectiveness of RCA in terms of water absorption, bulk density, and compressive strength and provide better insights in treating and conditioning RCA to make its reuse in construction industry to provide sustainable solution.

Keywords
C & D waste, recycled concrete aggregate, clung mortar, treatments, sustainable construction.

Three-Dimensional Finite Element Analysis for Parametric Study of TBM Driven Tunnel

Poorva Moghekar, Student, B. Tech (Civil Engineering), College of Engineering, Pune, India
Rutuja Reure, Student, B. Tech (Civil Engineering), College of Engineering, Pune, India
Ashlesha Solanke, Student, B. Tech (Civil Engineering), College of Engineering, Pune, India
M. S. Ranadive, Professor and Head, Department of Civil Engineering, College of Engineering, Pune, India

Abstract:--
Increasing population and urbanization leads to traffic and space congestion issues. To ease out this complication, the scope of construction of tunnel infrastructure has risen from the last decade in urban areas. Recent advancement in tunneling using Tunnel Boring Machine (TBM) has proved to be more beneficial in working under complex and challenging geological conditions. While being safe and faster it provides a cost-effective solution for urban development. Besides these advantages, tunnel construction work has a severe impact on structures above and around the tunnel alignment. Therefore, the study of the ground-induced settlement of tunnels through various geological conditions and diameters has been an emerging topic for researchers. Previous research had concluded that tunnel diameter, critical depth to diameter (C/D) ratio, and ground strata have a critical impact on the face stability of the tunnel. This research work focuses on the face stability of tunnels in different sets of geological and geometrical parameters. Three-dimensional (3-D) finite element analysis method using Midas Gtx Nx was proposed in this work. Hoek and Brown failure criteria were applied while modelling. The parametric study had been done on the crown and on the invert to observe their displacement and stresses. This study concludes that tunnel diameter and geological parameters had a critical impact on tunnel face stability. Proper investigation of these parameters is essential in the pre-planning phase of tunnel construction to prove its benefits for society.

Index Terms
Tunnel, Finite Element Analysis, Ground strata, Parametric Study

Mechanical Properties of Roller Compacted Concrete Mixes as the Pavement Material

Raksha J. Khare, Research Scholar, Department of Civil Engineering, AIKTC, Panvel
Dr. Rajendra Magar, Professor and Head, Department of Civil Engineering, AIKTC, Panvel
Dr. H.S.Chore, Associate Professor, Department of Civil Engineering, NIT,Jalandhar

Abstract:--
The paper presents the limited experimental investigation on the possible utilization of the fly ash in the roller compacted concrete mix and further, its possible utilization in the concrete pavements. Apart from the controlled mix, three RCC mixes with 15, 30 and 45% of fly ash as cement replacing material was prepared. The specimens were cured for three, seven and twenty eight days. The cured specimens were tested for compressive, flexural and split tensile strength. It is observed that the strength of all the three mixes with fly ash shows relatively less strength as compared to the controlled specimen although the strengths increases with curing period in respect of all the mixes. Further, the trial mix 1 (R1) is found to be the suitable mix for possible utilization in the pavement of low traffic volume roads.

Keyword
Optimum water content; RCC; compaction

Stabilization of Expansive Clay Soil with Sugarcane Bagasse Ash and Sawdust: An Experimental Study

M.Gurusamy, Assistant Professor, J J College of Engineering & Technology, Trichy, Tamilnadu
M.Jothi , Assistant Professor, J J College of Engineering & Technology, Trichy, Tamilnadu

Abstract:--
Many times, the soil's geotechnical qualities are weak, affecting the soil's stability and, as a result, failure. As an addition with bagasse ash and sawdust are used to improve soil stability. Because bagasse ash is abundant in silica, calcium, and other minerals, it provides the homogeneous material needed to execute the test. With its high silica content, Sawdust appears to be an inert substance that is unlikely to react with minimal cementitious to generate calcium silicates. It's also unlikely that it'll be as reactive as finely separated fly ash. Sugar industry waste and wood industry waste are mixed with clayey soil in our project to improve the geotechnical qualities and make it more usable. We looked at the impact of stabilized soil on its geotechnical qualities. For soil samples that have been combined, the standard Proctor Test and the CBR have been used.

Keywords
Bagasse ash, Sawdust, Stabilization, Clay soil, Silica, Calcium and Minerals.

Influence of Rheometer Type and Concrete Constituents on Rheology of Concrete – A Review

Rhea Fernandes, Post graduate student, Goa Engineering College, Farmagudi ,[2] Professor, Goa Engineering College, Farmagudi
Dr. Purnanand P Savoikar, Professor, Goa Engineering College, Farmagudi

Abstract:--
Rheology means study of flow behaviour of liquids. Rheology of concrete refers to study of flow behaviour of concrete. Freshly mixed concrete or concrete which is in plastic state has complex behaviour. This property of concrete is not given much importance but it is a very important property of concrete. Before preparing concrete its mix design has to be done and according to it concrete is produced. In addition to this quality of the constituents used in the preparation of concrete also plays an important role. Adjustments have to be made when the concrete is in plastic state so that the required strength of concrete is achieved after hardening. Workability and rheology of concrete are interconnected to each other. Fluid concrete contains yield stress and plastic viscosity and these are parameters of Rheology. There are various models which relate to rheology of concrete. Rheometers are instruments used to measure rheological properties of plastic concrete. This is done by subjecting concrete to stress, and then its deformation and response to internal forces is noted. According to this information flow curves are plotted. By testing rheological properties of concrete before its placement many errors and flaws like cracks, honeycombing etc. can be reduced. New instrumentations which are convenient are also adopted to check rheological properties of concrete. This way rheological property will be checked regularly on site and better performance of concrete mix and economical construction can be accomplished.

Index Terms
Concrete, Mix design, Plastic viscosity, Rheology, Rheometers, Workability, Yield stress.

Investigation of the participatory approach to Decision making for Urban Regeneration Intervention

Sumana Jayaprakash, Asst Professor, Malnad College of Engineering, Hassan
Dr. Vimala Swamy, Professor, School of Architecture, REVA University, Bengaluru

Abstract:--
Public participation in the decision-making process in Urban Interventions is the key to the success of the project for improving the quality of life of its citizens. The citizen has the democratic right to express his needs and aspiration; he is the final user who experiences the outcomes of the policy decisions. Non involvement of the citizens in the planning process can bring about the misinterpretation of the intention of political leadership and lead to opposition and protest. The inadequate understanding of citizens of the urban context makes public participation ineffective. In this context, the decision-makers are often faced with the challenges of the level of confidence of the citizens about their ideas and responses being incorporated in the project and the confidence of the citizens in the local urban authority in its ability to carry out the project. However, the decision-makers base their decision on the assumption that the citizens have a general understanding of the urban issues. This research work investigates the basis of this assumption. 1. Do the citizens have confidence that the local urban authority considers their choices and responses in the course of decision making 2. Do the citizens have the confidence that the local urban authority can undertake the Urban Regeneration project 3. Whether in the decision-making process of urban regeneration intervention, citizen's responses are backed by a general understanding of urban issues. The case study taken up is of Hassan city. Five areas of crucial importance have been selected based on the development plan report of the city. The integrated approach aims to find the most appropriate area for proposing the Urban Regeneration project. The framework adopted includes 1. Questionnaire survey: to collect citizens' responses 2. Analysis of variance (ANNOVA) for analysis of the data collected.

Keywords
Investigation, citizens, urban context.

Optimization of building orientation and WWR for daylight in Residential building in the subtropical highland climate

Venu Shree, National Institute of Technology Hamirpur (H.P.)
Jai Prakash, National Institute of Technology Hamirpur (H.P.)

Abstract:--
Shimla, with the geography of the hilly land and the climate is subtropical highland. Enumerating daylight quality of residential buildings such area is crucial as building orientation, shape factor and WWR (window wall ratio) effect the day lighting in a building. This study analyses the orientation of group housing clusters to provide best daylighting interiors. Different typology of group housing clusters has been analyzed by the application of simulation tools using currently available weather file. The parameters considered in the study are daylight factor, useful daylight illuminance, daylight autonomy, continuous daylight autonomy (cDA), Annual sun exposure (ASE). Rhinoceros was used to develop the 3D model and simulation was performed with the help of Ladybug, Honeybee and Diva tools. Simulation results shows that, two dwellings clusters (four story rectangular) that are facing southern side are the most suitable option for the location.

Studying Psychodynamic influences towards rejection of Low-cost houses by people in Tamilnadu

Komagal Anupama K, Research Scholar, Periyar Maniammai Institute of Science & Technology, Thanjavur –Tamilnadu
C V Subramanian, Professor, Periyar Maniammai Institute of Science & Technology, Thanjavur- Tamilnadu.

Abstract:--
In modern communities the terms like "Low Cost", "Cost Effective" & "Under Priced" prefixed by the building / Housing Industry for the design of building structures/ Houses which is primarily to fulfill the basic need i.e., Shelter. For Found that the people have deeper negative connotation to their life space and particularly towards accepting the attributes of the low-cost Housing mentally and physically. It seems to be a prevailing conception that the low-cost houses are substandard in all aspects. However, people at large, reject the low-cost houses in Tamilnadu. Perhaps, it is learned that there are definite internal processes that influences the people's attitude towards rejecting the low-cost building structure as their physical setting for living. In light of this fact, this paper attempts to study and explore the psychodynamic factors that influences rejection of Low-cost houses in Tamilnadu In pursuit of this, the people's psychodynamic aspects like: needs, drives, emotions, thoughts, feelings, rational thinking, cognition, anxiety, pride, desires are assessed and analyzed by ANOVA analysis – Minitab to verify the variation between in the hierarchy of the factors and also ranked by applying Henry garret(HG) ranking method. The results indicate that certain psychodynamic components are strongly responsible for rejection and whereas certain others are moderate in rejecting and few others are low in influencing the rejection of Low-cost houses by people in Tamilnadu.

Keywords
Affordable Housing, ANOVA analysis, Henry Garret, Psychodynamics.

Lateritic Geopolymer Concrete

Jagruti Majalkar, PG Student, Goa Engineering College, Farmagudi
Dr. Purnanand Savoikar, Professor, Goa Engineering College, Farmagudi

Abstract:--
This study reviews the various elements that determine the strength of laterite-based and other geopolymer concrete. In today's construction world, concrete is by far the most versatile, long - lasting, and reliable material. Ordinary Portland cement is second only to the automotive sector in terms of Greenhouse gas emissions that contaminate the atmosphere. Geopolymer binders have emerged as more environmentally sustainable and long-lasting alternative approaches to cement. The available research findings were utilized to study the mechanical and microstructural properties of laterite-based geopolymer. The aim of the present work is to analyze the potential of lateritic soil deposits in Goa as a precursor or source material for geopolymers. This paper also outlines the key application areas of geopolymer concrete. It also compares the compressive strength of four different mixes designed for geopolymer concrete.

Index Terms
Geopolymer concrete, Lateritic geopolymer, Alkaline activator, Temperature curing, Durable.

Temperature Variation of Pavement Design in India

Dhiraj Devendra Yadav, Student, M.Tech Research Scholar,G.H. Raisoni Engineering College,Nagpur
Dr.Bhalchandra V.Khode, Professor,G.H.Raisoni Engineering College,Transport Engineering Department

Abstract:--
Pavement behaviour is greatly affected by climatic conditions.Temperature is the only one climatic factor that controls the mechanical properties of pavement design.Flexible pavement design is done through Indian Road Congress (IRC):37-2012.Thus contribution of temperature in each layer of Pavement is important.Major Highway in India are primary of flexible pavements,so we will consider flexible pavement for our analysis.This paper presents design of pavement considering variation of elastic modulus value month wise throughout the year and compare old pavement design using IRC:37-2012.Temperature Model has been proposed to determine temperature of pavement monthwise.Relation between air temperature and pavement temperature is used and how are they dependent.Latitude of Location is used in determining pavement temperature.

Keywords:
pavement,temperature,pavement temperature model

Nonlinear Modeling for Prediction of Undrained Shear Strength of Soil

Rahul Ramdas Wankhade, Research Scholar, Department of Civil Engineering, Prof Ram Meghe College of Engineering & Management, Badnera-Amravati, India
Dr. P. V. Durge, Professor, Department of Civil Engineering, Mauli College of Engineering, Shegaon, India

Abstract:--
Shear strength the most important property of soil directly governs stability of structures. It is determined in laboratory using sophisticated equipments and is found to be associated with errors. Alternative such as the empirical correlations are considered to be valid for particular range. With the advent of computational techniques, such as mathematical, numerical and artificial intelligence are explored for determination of shear strength This paper presents the computational study carried out to develop model for estimation of undrained shear strength.
Basic index properties such as silt content, clay content, plastic limit, bulk density, liquid limit and depth of soil samples are used for prediction of shear strength. The geotechnical data set used is obtained from investigation reports of various sites across India. The processed data analyzed for its relevance is used for development of nonlinear least square regression and Multilayer Perceptron networks.
The prediction ability of both model is evaluated by Root mean square error, Mean absolute error, correlation coefficient, t-value, coefficient of efficiency, cumulative probability and over fitting ratio. Contribution of each of the basic index property is verified by Garson's algorithm. MLP model is found to be efficient in comparison with the regression model.

Keywords
Neural Network, Shear strength, Statistical analysis

Modeling Migration of Arsenic Contaminated Groundwater using MODFLOW: A Case Study

Supriya Phurailatpam, Department of Civil Engineering,Babu Banarasi Das Institute of Technology and Management, Faizabad Road, Lucknow, Uttar Pradesh , India

Abstract:--
Arsenic contamination in the groundwater is increasing at an alarming level with time and more areas are becoming contaminated. At least 28 million people currently drink water containing more than 50 µg/l of arsenic and many more consume water with > 10 µg/L of arsenic. Evidence of chronic arsenic toxicity is accumulating and includes melanosis, hyperkeratosis of palm and sole, gangrene and skin cancer.
A MODFLOW based three-dimensional model has been simulated to understand the movement of water and arsenic in the study area situated in the Yamuna Sub-basin, West Bengal. Microbial reduction of iron oxyhydroxide (FeOOH) and release of its sorbed arsenic load to solution is an important mechanism by which arsenic enters groundwater. Arsenic pollution does not arise from oxidation of sedimentary sulphides nor from ion- exchange with phosphorus derived from fertilizer (or other sources).
MODFLOW was run for the study area and the movement of water in the study area was simulated. It was seen that the variation of hydraulic heads was more in clay than in sand layer.
Arsenic was assumed to be injected continuously at a well 12005 m away from both the western and northern side of the Yamuna Sub-basin in the block of Chakdah, Nadia district at a depth of 25 m from the ground level. Simulation was performed for the movement of arsenic for every 1 year for a stretch of 20 years. The spatial and temporal distribution of arsenic was studied through contours maps for 1, 5, 10, 15, and 20 years. The concentration of arsenic vs time graph was also drawn. It was seen that arsenic was spreading more in the sand layer than in the clay layer, affecting more and more places near the study area.

Multi objective optimization of space layout for energy efficient and cost-effective building

Harshalatha, Research scholar, Manipal School of Architecture and Planning, Manipal Academy of Higher Education, Manipal
Shantharam Patil, Professor, Manipal School of Architecture and Planning, Manipal Academy of Higher Education, Manipal
Pradeep G Kini, Professor, Manipal School of Architecture and Planning, Manipal Academy of Higher Education, Manipal

Abstract:--
Improving the energy performance of buildings is crucial for environmental protection, energy savings, and a better living environment. For an efficient system, several design control strategies such as building space load, occupancy, lighting, and HVAC must be optimized. Building space layout optimization is basically a multidisciplinary technique integrating a wide range of energy performance goals. Through a comprehensive literature review, this research report investigated the multi objective optimization methodologies coupled with computer simulation software for improving the architectural space layout as well as related parameters to design a cost and energy efficient building. Furthermore, this study examined the significance of multi-objective optimization algorithms and their recent advances to improve the performance of non-domestic buildings, and prospective areas for future research have been identified.

Keywords:
Architectural Space layout, Multi Objective Optimization, Energy Performance, Cost Efficiency.

Irregular Building Configuration with Fixed Base and Flexible Modified Winkler Model in Sap 2000 V.19.2.1

Deepa S, Carlos Hilado Memorial State College, Talisay City, Negros Occidental, Philippines
I.R.Mithanthaya, Carlos Hilado Memorial State College, Talisay City, Negros Occidental, Philippines
S.V.Venkatesh, Carlos Hilado Memorial State College, Talisay City, Negros Occidental, Philippines

Abstract:--
Now a day's irregular building contribute to modern infrastructure. It is important to know the behavior of building subjected to irregularity. Irregularity deals with configuration means deals with arrangement of the parts of structure. If the arrangement of parts of structure are irregular then how it effects the seismic analysis of structure. There building configuration types are regular, horizontal and other is vertical. Configuration. Horizontal and Vertical configuration deals with how the parts are arranged horizontally and vertically. The configuration of structure effects the building during sever earthquake and causes damage. Many of the previous damage shows us that it is important to study about irregular structures. The damage happens even with good design. In the present study the building is analyzed with base as fixed whereas, in reality the building rests on the soil. The software chosen should analyze the building considering soil structure interaction and nonlinear conditions.
In this study a. 3D model is analyzed using SAP 2000V19.2.1 software. Two models are considered for analysis one with fixed base and other with flexible soil base (MWM). Analysis is performed on a 10 storey, 3D vertically irregular building. The building with fixed base and with flexible soil base (MWM) is analyzed for nonlinear analysis. The results obtained for irregular building is compared for fixed base and flexible base. The difference in displacement, base force, hinge formation and time period are noted. The building which projects improved practical outcome can be selected for upcoming reference.

Keywords
Nonlinear analysis , Fixed base, Modified Winkler method(MWM).

Comparison of performance of natural and chemical coagulant and blend of these coagulant

Swaraj bharti, Student, Department of Civil Engineering, Jabalpur Engineering College, Jabalpur, India
Shailza verma, Assistant Professor, Department of Civil Engineering, Jabalpur Engineering College, Jabalpur, India

Abstract:--
Natural coagulants have shown their coagulation efficiency as reported in a substantial number of research papaers. But still the use and widespread application of natural coagulants in the water industry for water treatment is low. Because the lack of knowledge and availability of time. Health problems caused by chemical coagulant have been in news for several time; various reports have mentioned the direct and indirect toxic effects of metal in the form of tumours, Alzheimer and allergies. Natural coagulants have been increasingly popular in the past few years due to their benefits and the fact that it resolves most of the associated problems when using chemical coagulants. Glycine max and blend of alum with aloe barbadensis and glycine max are used as coagulants in this study in place of regularly used chemical coagulants to reduce the turbidity of synthetically prepared turbid water of 100 NTU. The tests were carried out using jar test apparatus to determine the optimum dose quantity of natural coagulant. Different concentration of the stock solution is prepared and mixed in synthetic turbid water in different quantity and the efficiency of the glycine max, blend of alum with glycine max and blend of alum with aloe barbadensis were 85.4%, 91.1% and 90.8% respectively. The effect of the natural coagulant on other water quality parameters such as pH, hardness, alkalinity, electrical conductivity etc was also found out. The use of natural coagulants is easily available that's why also cheap in the local area whare test is carried out in india, and environment-friendly approach for water treatment as observed in this study.

Keywords
Natural coagulant; Alum; Glycine max; Coagulation; Aloe barbadensis; Synthetic turbid water

To Study the Effect of Wind Load on Multi-Storied Building with Different Shapes

Nidhi Gosavi, M-Tech Student, Civil Engineering Department, YCCE, Nagpur
Vaishali Mendhe, Assistant Professor, Civil Engineering Department, YCCE, Nagpur

Abstract:--
The construction of the multistoried building became unavoidable due to the population explosion and land scarcity. These multistoried buildings are subjected to lateral loads such as wind load and earthquake load. Wind pressure increases with the increase in the heights. Thus, the safety and stability of the building become important. When the plan geometry is irregular it can induce torsion, which can cause the failure of the structure, hence it is essential to analyze the wind forces during designing. In this study, the different plan shapes buildings such as Rectangular shape, L-shape, and C-shape in different terrain categories are modelled for the G+15 storey using STAAD. Pro software. IS 875 (Part 3): 2015 is used for the wind forces. This paper provides information about the variation in the storey drift and storey displacement with the change in plan shapes in different terrain categories.

Index Terms
Plan shapes, Storey Displacement, Terrain categories, Wind load

Assessment of the Land use/land cover changes in the Gomti River Basin in Tripura using spatial tool

Subhrajyoti Deb, Assistant Professor, Department of Civil Engineering, ICFAI University Tripura , India
Rajat Dey, B.Tech student, Department of Civil Engineering, ICFAI University Tripura, India
Rudrajit Deb, B.Tech student, Department of Civil Engineering, ICFAI University Tripura, India

Abstract:--
Spatial analyst tools like Arc-GIS, Q-GIS, ERDAS, etc. are gaining a lot of interest nowadays for land use/land cover mapping for any catchment area. The western part of Tripura, due to its geographical location and topography, is under constant risk of rainfall-driven flash floods occurred in the Gomti River, which causes colossal damages to life and properties almost every year. In this view, a study for the assessment of the land use/land covers changes in the Gomti River Basin in Tripura has been done using one of the advanced spatial tool Arc-GIS (Arc-map 10.2.8). In this study, we have used landsat-8 imagery spanning over three consecutive decades 2001, 2011, and 2021 which were obtained from the United States Geological Survey (www.usgs.gov.usa). The images were classified using Maximum Likelihood supervised classification method to extract information from satellite data, and post-classification change detection method was employed to detect and monitor land use/cover change. This paper also highlights the increasing population and economic activities which are putting pressure on the available land resources in the Gomti River Basin in Tripura.

Keywords
Arc-GIS, Gomti basin, Land use, Land cover.

Prospects of Cost-Effective Building Structures in India:
A Focus on Eco-Sensitive Vernacular Traditions in Contemporary Architecture

Priyanka Mishra, Assistant Professor and Ph.D. Scholar, Kalinga Institute of Industrial Technology (KIIT) Deemed to be University, Bhubaneswar, India
Anashuiya Bhattacharya, 5th Year, B.Arch, School of Architecture & Planning, Kalinga Institute of Industrial Technology (KIIT) Deemed to be University, Bhubaneswar, India

Abstract:--
The growing population of the world and the global shift towards urbanization knitted with the challenge for sustainability and affordability demands call for a dynamic approach for both continuity and the necessities of change. It has become imperative to ask questions like- What is the relevance of vernacular architecture in contemporary life? Can these vernacular traditions be merged with the needs of today's world to create cost effective building structures relevant in modern times? Is it possible to develop a language of design that is primarily contemporary but is influenced by vernacular traditions to achieve a sustainable and affordable built environment? Vernacular architecture is essentially a style of architecture that has evolved over the centuries as an amalgamation of the society and culture. Tailored to the climatic, aesthetic, functional, and sociological needs of a society, it nurtures a complex balance between the natural, built-up as well as social environment. The debate about the need for vernacular traditions in architecture with the emerging technology is no longer polarized. To achieve a sustainable and affordable built environment, these vernacular traditions need to be merged with the needs of today's world to create low-cost building structures relevant in modern times and to develop a language of design that is primarily contemporary and also influenced by vernacular traditions. Once the potential of vernacular traditions in contemporary times is revived, especially in terms of creating affordable structures, its dynamic nature enables it to constantly evolve in the ever-changing socio-economic and socio-cultural milieu, making it a useful model of inspiration for all times. Over the years, various architects, within and beyond India, have tried to find the relevance of vernacular in contemporary architecture resulting in a developmental approach. Through this developmental approach, the new buildings symbolized the continuing vitality of local culture so that the new building is expected to reinvent, rather than reproduce, the vernacular to be a part of the contemporary while eminently respectful to the past. Some of the architects in the country have time and again tried to create spaces inspired by developmental vernacular architecture.
This paper focuses on understanding and establishing an interlink between developmental vernacular architecture and affordability in urban areas. This will be done through the case studies of various buildings in India by architects who have tried to focus on vernacular traditions in contemporary architecture along with a comparative study in terms of its cost-efficiency.

Keywords
Traditional Architecture, Developmental Vernacular Architecture, Affordability, Eco-Sensitivity

Flyash Based Geopolymer Concrete - A Review

Dr.K.Mahendran, Professor and Director i/c, The Gandhigram Rural Institute (Deemed to be University), Gandhigram, Dindigul District, Tamil Nadu, India
R.T.Balamurali, Assistant Professor and Research Scholar, The Gandhigram Rural Institute (Deemed to be University), Gandhigram, Dindigul District, Tamil Nadu, India

Abstract:--
Urbanization increases the demand for modern building construction and development in the country. Therefore the continuous growth in the construction industry is to be done to fulfill the need of the people and make a comfortable living. Concrete is an essential material used in construction, so Cement is required in large amounts for making cement concrete structures. The manufacturing of Cement emits carbon dioxide, which is harmful to our environment. The fly ash, ground granulated blast furnace slag, rice husk ash, quartz powder, etc., are the binding materials used when it mixes with Alkaline Activator Solution (AAS) in Geopolymer concrete. These sustainable waste materials are beneficial to reduce the production of Cement and reduce CO2 emission. This paper reported the binders used to produce Geopolymer concrete and their Physical and Mechanical properties, including Curing methods and concrete mix design.

Review of Non-Destructive Test methods in the assessment of concrete structures

Gauravi Devendra Gade, Student, Yeshwantrao Chavan College of Engineering, Nagpur, India
Ram Anil Raut, Student, Yeshwantrao Chavan College of Engineering, Nagpur, India
Nikhil Anil Rasekar, Student, Yeshwantrao Chavan College of Engineering, Nagpur, India
Assistant Prof. Vivek Jayale, Yeshwantrao Chavan College of Engineering, Nagpur, India

Abstract:--
This paper has reviewed the state of Non-Destructive Testing (NDT) as applied to Civil Engineering from the last decade. This review paper reports on NDTs' application, working principle, and configuration, performance, and accuracy. Non-destructive testing (NDT) is also known as non-destructive evaluation (NDE), non-destructive inspection (NDI), and non- destructive testing (NDT). The goal of NDT is to examine a component in a safe, dependable, and cost-effective manner while inflicting no or minimal harm to the equipment and Structure. NDT is important in daily life and is required to ensure safety and dependability. The major use of NDT is to ensure product safety, which has a huge economic value in terms of preventing loss of life and property. It's vital to employ a range of methods. It's critical to comprehend the advantages and disadvantages of any test process. NDT procedures assist uncover hidden flaws such as cavities and water penetration within a building, in addition to providing information on material characteristics. Various NDT techniques such as Rebound Hammer, Visual Inspection, Ultrasonic Pulse Velocity (UPV) Test, Rapid Chloride Permeability Test (RCPT), Water Permeability Test, etc are described in this study.

Index Terms
Non-Destructive Testing (NDT); Ultrasonic Pulse Velocity (UPV) Test; Rapid Chloride Permeability Test (RCPT); Rebound Hammer; Concrete Structures

Review of natural fiber suitability for asphalt strength enhancement

Shobha Rani Nadupuru, Research Scholar, Dr.D,Y Patil Institute of Technology, Pimpri, Pune
R.K.Jain, Professor, JSPM's Rajarshi Shahu College of Engineering, Tathawade, Pune
Deepa A. Joshi, Professor, Dr.D.Y Patil Institute of Technology, Pimpri, Pune
Radhika Menon, Professor, Dr.D.Y Patil Institute of Technology, Pimpri, Pune
Gobinath.R, Professor, SR University, Warangal

Abstract:--
Development of a country relies directly on the road network it contains which serves as the backbone of economy. Roads or in technical term pavements are considered not only supportive to economy but for the social development, due to the urbanisation and industrialisation need for better road infrastructure which can hold more load, durable and also sustainable is increasing across the globe. Strength of pavement is directly proportional to the design mix used, material quality, subbase structure, material in subbase, environmental conditions in that area etc. Certain parameters cannot be controlled by the pavement designers which force them to go for high strength material to avoid deterioration and to increase durability. One such method adopted worldwide is to incorporate fibers into the binding material (bitumen, tar) which will increase the strength of the binder and in turn the strength of the pavement constructed. In this work, we had reviewed the need for fiber incorporation, methods of fiber addition, types and nature of fibers used and its impact on strength, durability and other aspects of pavement. Systematic review is done to analyse the need for fiber usage and the materials used to ascertain the impact it has in modifying the properties of bitumen and in turn the pavement as a whole. Both natural and manmade fibers being used effectively across the globe for this purpose, this review provides an insight into the method of utilising various fibers for better performing bitumen based pavement.

Index Terms
fibers, natural fibers, bitumen, fiber added bitumen

Identify the Construction Project Managers' Soft Skills and their Benefaction to Project Accomplishment

Rida Ahmad, MTech Research Scholar, Department of Civil Engineering, Integral University Lucknow
Mohd Asim, Assistant Professor, Department of Civil Engineering, Integral University Lucknow
Zishan Raza Khan, Associate Professor, Department of Civil Engineering, Integral University, Lucknow

Abstract:--
The reason for this study is to distinguish key delicate abilities needed by construction project administrators and its effect on their project achievement. The authors have played out a Comprehensive Literature Review (meta-structure) as a proof to help the contention that project chiefs could build the odds of projects being effective by applying their delicate abilities to oversee project group and its presentation. The discoveries of this study exhibits that the recognized delicate abilities are undivided attention, correspondence, theoretical abilities, peacemaking, human asset the executives, human abilities, administration abilities, inspiration abilities, arrangement abilities, relationship building abilities, political and social mindfulness, polished methodology and morals. These abilities are basic towards project achievement, nonetheless, it is likewise recognized that delicate abilities and hard abilities, both works related to one another to accomplish achievement. This study gives a huge commitment by building up the need of growing delicate abilities in project administrators to oversee groups viably and productively, along these lines expanding their presentation and the odds of project being fruitful.

Index Terms
Construction Project manager, Soft Skills, Comprehensive Literature

Seismic retrofit of an existing RCC residential building using Non-linear time history approach

Rohit Kumar, MTech Student, NIT Patna, India
Ajay Kumar, Assistant Professor, Department Of Civil Engineering, NIT Patna, India

Abstract:--
Earthquakes have affected numerous parts of the country in the last three decades. The collapse of residential structures results in the death of people from many walks of life. In our nation, a substantial majority of residential structures are not earthquake resistant. As a result, this research focuses on the seismic evaluations of an existing G+4 r/c building in India's seismic zone IV and assessing the effectiveness of the retrofit approach in advance. This research also emphasises the benefits of using NLTH analysis to document essential aspects in current building seismic response. This study demonstrates how concrete jacketing, steel bracing, and fibre reinforced polymers, which are utilised to strengthen crucial areas, may be used to achieve this. This investigation employs a nonlinear time history analysis technique, which is carried out using ETABS, a finite element-based programme. In terms of storey drifts, shear, bending, torsion, bending, time period, and frequency values, the data are compared to the present structure and the retrofitting structure.

Keywords –
seismic retrofit, nonlinear time history, fiber reinforced polymer, concrete jacketing, steel bracing

Development of Implementation Methodology for Site Waste Management in Road and Highway Construction Industry

S Rahul Raj, Post Graduate Student, Ramaiah University of Applied Sciences, Bangalore, India
Akshayakumar.V.H, Assistant Professor, Ramaiah University of Applied Sciences, Bangalore, India
Dr. H. M. Rajashekhar Swamy, Professor, Ramaiah University of Applied Sciences, Bangalore, India

Abstract:--
The reusing and recycle of waste resources is a subject of worldwide concern and incredible global interest for those keen on practical turn of events and securing the climate. In late many years, worldwide creation of development and demolition waste (C&D waste) has fundamentally expanded and turned into an overall issue. Development of interstate devours gigantic measures of waste in term of materials and energy. These wastes need to be recycled, reused and reduced to sustain the environment. In this study we aim at conducting a Questionnaire survey from different construction companies. Then we observe that demolition and renovation are main factors of waste production at site. A Revit model of Extension of a real time intersection is developed and reuse of waste debris and other soil waste is observed. Quantity validation is done for reuse efficiency. Therefore, by reusing the waste generated at site for the re-construction of the road makes a cost effective and promotes environmental sustainability.

Keywords:
Environment, Questionnaire survey, Demolition, Revit model, Renovation, Real time intersection.

A Study to Enhance the Reliability of Construction Materials Management Adopting ICT Tools (Information and Communication Technology) in Lucknow (U.P. Region)

Sacchidanand Pandey, MTech Research Scholar, Department of Civil Engineering, Integral University Lucknow
Mohd Asim, Department of Civil Engineering, Integral University Lucknow
Syed Aqeel Ahmad, Professor and Head, Department of Civil Engineering, Integral University, Lucknow

Abstract:--
Progressively, construction organizations need to foster upper hands dependent on a satisfactory and escalated utilization of data and correspondence innovations which is popularly known as ICTs to upgrade the productivity and adequacy of construction material management processes. Researches have unveiled that the application of ICT in addressing the construction materials on location has not comprehensively utilized by numerous construction organization despite of the implicit benefits. This is due to some barriers looked by the construction organization in espousing the ICT. The point of the study was to investigate the utilization of ICT in construction materials management in Lucknow construction industry. Notwithstanding the likely advantage of ICT, persuading construction organizations to accept its utilization and execution has demonstrated a troublesome errand. This exploration looks to examine on the acknowledgment of construction team for hire for ICT change to the materials management in construction projects. When ICT devices are well-conditioned enforced, the construction organization will serve from them and as a consequence, the organization will be competent to save on disbursements and ultimately make high returns. They will also be competent to demote or freeze out prodigality; they will also demote inventory gripping accordingly unleashing capital. Accordingly, it's significant that, information system investigators perdure to probe and deliver substitute knowledge that moves the construction organization towards conventional dream of "friendly ICT tools".

Index Terms
Construction Materials Management, ERP, ICT, LMRC

Visual Scape Analysis of a Heritage Town

R. Saravana Raja, SRM Institute of Science and Technology
P.Gopalakrishnan, SRM Institute of Science and Technology

Abstract:--
Background - Background - Historic town is characterized by tangible and intangible elements. In the aspects of tangible elements, buildings are the major one which provokes the memory of the observer. It adds identity to the place, conveys the history, past events and life the people. Development and urbanization always threaten the historic areas. Heritage character of the buildings are defined by its design elements, characteristic features, façade treatment, color, texture and so on. Due to the rapid change of urbanizations, there is a change in this features which in turn have the impact on heritage character. The new buildings and changes in the existing buildings affects the quality of the streetscape that deteriorate the built environment. Documenting and analyzing the changes that happens in a historical town can be the one that needed to be appreciated for conserving the heritage /historical town.
Methods – The temple town Srirangham is taken as the context and the two streets near the main temple has ben selected for the detailed study . Photographs were taken and the photomontage has been used as technique to understand the visual continuity of the street elevation.
Findings - The Old buildings between 50 – 75 years & above 75 years are retaining the character defining elements in the exterior façade. Buildings between 25 -50 years express the loss of character defining elements and struggle to retain them in the process of urbanisation. Buildings below 25 years have completely lost the character defining elements and its deviated from the temple contact of the historic town streetscape
Application – The guideline can be derived for such sort of heritage/historical towns to understand to avoid the influence of urbanization and to maintain the character

Behavior of Self Compacting Concrete under different temperature and climate condition : Review Paper

Shivam Verma, M.Tech, 2nd Year, Babu Banarasi Das University, Lucknow, India
Bilal Siddiqui, Assistant Professor, Babu Banarasi Das University, Lucknow, India
Prof.(Dr.) Om Prakash Netula, Professor & H.O.D, Department of Civil Engineering, Babu Banarasi Das University, Lucknow, India

Abstract:--
Self Compacting / Concrete (SCC) is certainly one of the most Innovative material used today by the Construction Industry because of its astonishing workability and low permeability , both properties being ensured by the large amounts of fine aggregates , the special additives and the fillers , that characterize SCC's mix compared to traditionally-vibrated concrete (VC) . since many of the structures where SCC is used (like tunnel linings , off-shore structures , containment shells , bridge decks , slabs on grade) are often required to face severe environment condition , such as fire , information on SCC's behavior at high temperature is badly required , because SCC's more dense or compact microstructures , with smaller and less connected pores , may in principle make this material more heat-sensitive than VC, as occurs in high-performance/high-strength concrete. While the thermal effects on VC have been extensively investigated in the last 20 years and several studies have been devoted to SCCs spalling in fire, only in the last few years due attention has been paid to the mechanical properties of SCCs at high temperature ("hot" properties) and/or after cooling ("residual" properties).
In this research, the performance of self-compacting concrete in simulated hot weather conditions is investigated. Test parameters included the ambient temperature, induced materials temperature, and the use of a retarder. The rheological properties, early shrinkage, and compressive strength were determined for different test parameters. The performance enhancement due to cooling the concrete materials and the use of a retarder was assessed and quantified. The use of a retarder had an adverse effect on the compressive strength between 7 and 90 days in simulated hot weather conditions. The J-ring test outputs were the most improved due to cooling SCC materials. V-funnel time T5 and the 28-day compressive and tensile strength were the least improved. The use of a retarder further reduced the compressive and tensile strength improvement percentages.

Index Terms
Hot weather , SCC , Retarder ,Shrinkage , mechanical properties .

Stilling basin Model Designing – A Review

Subodh Kant Pandey, M.Tech. Scholar (MANIT, Bhopal)
H.L. Tiwari, Associate Professor (MANIT, Bhopal)

Abstract:--
A stilling basin is used to dissipate excess energy of flowing water by utilizing hydraulic jump and impact action, and protect the downstream structure from scouring. Previous studies have demonstrated that the performance of stilling basin depends on location of different appurtenances like baffle wall, chute blocks, impact wall etc, and shape of outlets. Formation of hydraulic jump at downstream of stilling basin with high velocities causes scouring at the vicinity of downstream structure. To safe guard against such scouring, suitable stilling basin are designed, in which energy of flowing water is reduced. This paper provides a comprehensive review on different types of stilling basin models that have been designed by past investigators along with the design of appurtenances. Different performance criteria are also mentioned which are used to compare these models on the basis of stilling basin length. The purpose of this paper is to provide a review of present trends of the art of designing a stilling basin and outline ideas for future research.

Key Words:
Froude number, Hydraulic jump, Impact action, Stilling basin, Performance.

A Review of Overtaking Behavior of Non-Motorized Vehicles in Mixed Traffic on Urban Roads

Ankit Kumar Pathak, M.Tech Scholar, Transportation Engineering, Babu Banarasi Das University, Lucknow, India
Bilal Siddiqui, Assistant Professor, Department of Civil Engineering, Babu Banarasi Das University, Lucknow, India
Prof. (Dr.) Omprakash Netula, Professor & HOD, Department of Civil Engineering, Babu Banarasi Das University, Lucknow, India

Abstract:--
In India most common kind of traffics we can find on the road are mixed traffic which can also be termed as heterogeneous traffic where bikes, cars, even heavy vehicles like buses and trucks all move in the same lane. We can clearly observe that here not only the motorized vehicles (MV) moving on road are in majority but also the demands are increasing at a constant rate. Even after all the craze about bikes and cars, non-motorized vehicles (NMV) holds their fort strongly and mostly students who go to school or people travelling for short distance prefer bicycles. In Highway Capacity Manual (HCM) there are is no clear provisions about the effects of non-motorized vehicles on road and thus research regarding bicycles (NMV) attracts many researchers whether the conditions are of either heterogeneous traffic or homogeneous traffic.

Key Words:
Heterogeneous traffic, Non-motorized Vehicles (NMV), Motorized Vehicles (MV), Highway Capacity Manual (HCM).

Planning and Design of Indonesian Cultural Park Tourist Object in Palembang
(Case Study: Taman Nusa Gianyar Bali Cultural Tourism Object)

Endang Sri Lestari, Architectural Study Program Lecturer Universitas Indo Global Mandiri
Anta Sastika, Architectural Study Program Lecturer Universitas Indo Global Mandiri
Muhamad Herman Felani, Architectural Study Program Student Universitas Indo Global Mandiri

Abstract:--
Taman Nusa is located on the Jalan Taman Bali- Banjarangkan banjar blah pane kelod, Sidan village, Gianyar Bali. Taman Nusa Gianyar Bali, is a miniature garden of Indonesia that depicts the diversity of Indonesia which consists of tribes including Malay, Nias, Javanese, Batak, Bugis, and many more with diversity and also displays various kinds of culture which are then renewed with some visual touches traditional houses from various regions with a village atmosphere and visual character and of course this is very attractive to tourists. Considering that Indonesia is very broad and consists of islands, to enjoy the variety of existing cultures it takes time and money, therefore the presence of this Nusa Park is a new type of entertainment facility and as a means of introducing existing cultures in Indonesia which are beginning to be abandoned by society. This study aims to examine the visual character of the Nusa Gianyar Bali park using descriptive analysis method. The results of the review can be used as a design reference in the planning of Indonesian cultural park tourism objects in the city of Palembang so that it can provide benefits and education to visitors to get to know the culture in Indonesia, especially people in the western part of Indonesia, with the planning of cultural tourism objects. It was as if the visitors of Indonesia were taken around Indonesia in a short time. Besides, there were many references about culture and fostering a sense of love and care for Indonesian culture.

Key Words:
The planning and design of object wisata, cultural park

Seismic Analysis of Cable-Suspended Linear Elastic Deck

Pankaj Kumar, Department of Civil Engineering, Chandigarh University, Punjab, India
Gurmail S. Benipal, Department of Civil Engineering, Shiv Nadar University, UP, India

Abstract:--
A theory of weightless sagging elasto-flexible cables under point loads is developed by the authors. Later this theory is used to develop the constitutive equations for cable-deck interaction. In this paper, the response of the cable-suspended elastic deck under the application of vertical seismic forces corresponding to 'El Centro' Earthquake is investigated. Under seismic excitations, small elastic displacements is observed in the presence of the sustained gravity loads. Its scope is restricted to the vertical response of a simply supported elastic deck suspended from two points with vertical hangers. The cable-suspended elastic deck is considered as two degree of freedom system for the behaviour under seismic loading. The peak amplitude of seismic response observed is relatively low for the node which has higher nodal weight. This facts is also true when additional load is placed at any one node its amplitude of oscillation under vertical seismic forces get reduced. Inertia plays a big role in vibration under the action of vertical seismic forces.

Key Words:
Cable-suspended, deck, elastic, inertia, seismic forces

Review Paper on Design of Traffic Signals at Nonsignalized Intersections Using Webster's, Irc & Trial Cycle Method

Pranav Kumar Pal, M.Tech Scholar, Transportation Engineering, Babu Banarasi Das University, Lucknow, India
Kamal Nabh Tripathi, Assistant Professor Department of Civil Engineering, Babu Banarasi Das University Lucknow, India

Abstract:--
In India growth of population plays an important role to increase the congestion at intersection because every person used separate vehicle for movement due to this reason traffic become out of control and create problem like accident, jam at the intersection. As we know every day many people die in road accidents due to lack of traffic control system because all intersections are not well signalized. So, it is not possible to control the movement of vehicles by traffic police due to increase in number of vehicles at intersection. Therefore, all intersections should be well signalized and traffic signals are specially designed for the emergency vehicles like Ambulance, Fire vehicles because emergency vehicles face delay at intersection when traffic at red light and it is very dangerous for our society. In this paper, Design of traffic signal is done with the help of the Indian Road Congress (IRC), Webster's method and Trial Cycle method. Traffic signal is better option for the effective transportation. Traffic signal systems are used to control the flow of vehicles with the help of traffic lights, where many roads meet together and make junction. Traffic volume studies are used to laid down mainly how many vehicles are moving on the road at a particular section during a particular time. Traffic signal is the best way of control vehicle movement at intersections without any accidents and conflicts.

Key Words:
Traffic signal, Traffic volume, Traffic light, PCU, IRC

Conceptualizing Residential Open Space in Contemporary Houses

Ar. Richa Gupta, Associate professor, Institute of Arch & Planning, SRMU, Lucknow
Dr. Mahendra Joshi, Professor, Lovely School of Architecture and Design, Lovely Professional University, Jalandhar

Abstract:--
Globalization leads to the opening of the boundaries politically, economically, as well as culturally. There is no doubt that globalization has contributed to economic growth, improved standard of living, and imported trends throughout the world. The changing needs and urban lifestyle lead to residential typology which is mostly irrelevant to our context and climate. In the era of concrete boxes, it is quite important to understand the importance of transitional spaces within the house. Courtyard in traditional Indian house is also one of the transitional spaces which satisfy all the behavioural, aesthetic, cultural and environmental need of the user and have been developed by trial-and-error method and reached to general acceptance. This study explores the benefits and challenges in adopting courtyard typology in present context. The survey questionnaire aims to know the user's perceptions and the perspective of experts on spatial, environmental, and behavioural characteristics of courtyard designs. Furthermore, Byelaws of different cities are compared to develop suitable protype for further investigation. The results show that the new courtyard housing type not only most affable model among the user and experts but also provide practical solution to the housing needs. This paper recommends designs for courtyards based on the literature review and the analysis of the user's perception.

Analysis of Drainage Network Capacity in Rawa Jaya Area, Ilir Timur I Sub-district, Palembang

Sartika Nisumanti, Civil Engineering Program, Faculty of Engineering, Universitas Indo Global Mandiri, Jendral Surdirman Street Km. 4 No. 629 Palembang, Indonesia
Norma Puspita, Civil Engineering Program, Faculty of Engineering, Universitas Indo Global Mandiri, Jendral Surdirman Street Km. 4 No. 629 Palembang, Indonesia
Afrenzi Edwi, Civil Engineering Program, Faculty of Engineering, Universitas Indo Global Mandiri, Jendral Surdirman Street Km. 4 No. 629 Palembang, Indonesia

Abstract:--
The Palembang city is a lowland area where almost the average land is dominated by swampland. The problem of flooding in the Pahlawan urban village is stems from the drainage network system in the Rawa Jaya area which is almost not well connected. This causes water due to high rainfall not to flow properly into the river so that during the rainy season some of these areas experience flooding.
This study has the aim of analyzing the performance of the drainage network system based on the capacity of the channel to the condition of the channel.
In analyzing the hydrology using probability distribution methods, namely Normal, Log-Normal, Gumbel, and Log-Person III. The frequency suitability test was carried out using the Smirnov-Kolmogorov and the Chi-Square.
The results showed that the rainfall was 116.74 mm/hour and the design flood discharge (Qr) for the 10 year return period was 3.684 m3/second. The carrying capacity of the discharge channel (Qs) is smaller than the design flood discharge value (Qr). This shows that the existing drainage channels are not able to accommodate the flood discharge so that it occurs or floods. The channel at point 4 leads to the discharge channel, the channel discharge capacity value (Qs) is 4.0296 m3/second while the design flood discharge (Qr) is 3.684 m3/second. The calculation results can be estimated that the channel discharge capacity is smaller than the planned flood discharge so that the drainage channel capacity cannot accommodate flood flows.

Key Words:
Drainage system, design flood discharge, flow coefficient

Barriers in the Green Building Practices Adoption: A Stakeholder's perception

M Shravan Kumar, M.Tech student, Department of Civil Engineering, Koneru Lakshmaiah Educational Foundation, Andhra Pradesh, India
Sunny Agarwal, Assistant Professor, Department of Civil Engineering, Koneru Lakshmaiah Educational Foundation, Andhra Pradesh, India

Abstract:--
India has become the world's fourth largest market for green building construction. The reasons for this demand are obvious: these structures are designed to save energy, waste, emissions, and water while also prioritizing occupant health and wellness through the use of eco-friendly construction materials and improved air movement. People are becoming more conscious of the importance of utilizing green solutions that do not hurt the environment, and the building industry is heading the same way. The research focuses on numerous literatures and attempts to assess the barriers to green building adoption or implementation in the residential construction. The goal is to find and assess obstacles by questionnaire survey using ranking based on individual stakeholder's perception from developing countries like India. The findings revealed that there is a need for a shift in stakeholder perceptions and attitudes toward green building development. This article will assist construction professionals in their decision-making and raise awareness about the advantages of using green buildings.

Key Words:
Green buildings, Awareness, Adoption barrires, Stakeholders perception, ANOVA

IFERP International Conference
IFERP Explore
https://www.icceasi.net/ | info@icceasi.net

UPCOMING CONFERENCES

Technoarete® Group
Integrating Researchers to Incubate Innovation

SUPPORTED BY

ALL CONFERENCE ALERT
Academics conferences at a glance

ECA
Get World wide Engineering Conferences Update..

Conference Alerts
Global Academic Conferences

INTERNATIONAL CONFERENCE ALERTS

ISBN : 978-93-92105-34-0