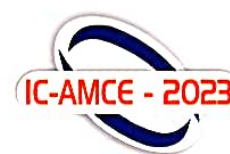




Proceedings of
**INTERNATIONAL CONFERENCE ON ADVANCES IN
MECHANICAL & CIVIL ENGINEERING - 2023**



Organized by: Department of Mechanical & Civil Engineering



Editors

Dr. Maheboob Nadaf

Dr. Vaibhav Shinde

Mr. Ghanshyam Pal

Mr. Dipesh Tare

Ms. Dipika Dalvi

Ms. Supriya shinde

Ms. Pallavi Patil

Mr. Avinash Parajapati

In Association With



Yagdu Singh Charitable Trust's (Regd.)

THAKUR COLLEGE OF ENGINEERING & TECHNOLOGY

Autonomous College Affiliated to University of Mumbai

Approved by All India Council for Technical Education(AICTE) and Government of Maharashtra

A - Block, Thakur Educational Campus, Shyamnarayan Thakur Marg,

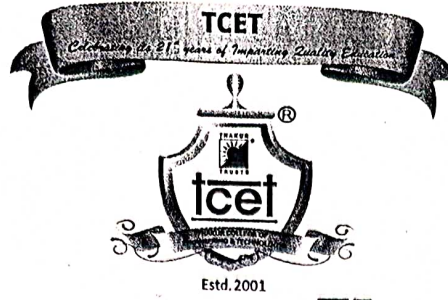
Thakur Village, Kandivali (East), Mumbai - 400 101

Tel.: 022-6730 8000 / 8106 / 8107 Telefax: 022-2846 1890 • Email: tcet@thakureducation.org

• Website: www.tcetmumbai.in www.thakureducation.org

INDEX - CIVIL

Sr. No	Paper Id	Title And Author	Page No.
40	1632	Lateral Load Performance of C Shaped Earth filled Wall-Panels with opening and Confined by Gi Wire Mesh - An Experimental Investigation <i>Sandeep Ranshur; Abhay Bambole</i>	203-207
41	4226	Effect of Variation in Stiffness of Transfer Girder on Stiffness of Floating Frame <i>Neelkanth; D. Joshi; Dr. M. M. Murud; Ankit M. Asher ;Amar D. Shah</i>	208-213
42	1899	Planning, Scheduling and Resource Allocation of Residential Building Using Microsoft Project- A Review <i>Abhishek Kumar Singh; Affan Khan; Shreyas Landge; Viren Chandanshive</i>	214-219
43	7663	Planning and Development of Waterways Transportation Along Coastal Cities – A Review <i>Hardik Vora; Alston Cerejo; Adarsh Pal; Ujala Yadav; Viren Chandanshive</i>	220-225
44	8818	A Review of Industry 4.0 In Construction Industry <i>Pallavi Dongare; Bhaveshkumar Pasi; Alfaiez Sorathia; Pranav Pawar; Rhea Gaikwad</i>	226-231
45	7269	Study on Partial Replacement of Fine Aggregate in High Performance Concrete <i>Ms. Neelam Petkar; Dr. Mohan Murudi; Dr. Vishal Thombare</i>	232-236
46	4658	Rain Water Harvesting & Waste Management for Community Building – A Review <i>Kanchan Chauhan; Pooja Dhanwade; Vaidehi Dombhare; Nazreen Khan; Puja Kadam</i>	237-244
47	6779	Selection of Construction Equipment Using Analytical Hierarchy Process (Ahp) & Analytical Network Process (Anp) <i>Sakshi Pashte ; Atish Pradosh ;Tanmayee Tele; Varun Valia;Viren Chandanshive</i>	245-248
48	7612	Influences of Fly Ash and Chemicals on Swelling Soil <i>Dr.Sachin Saraf ;Nilesh Bhopale; Suhas Pawar</i>	249-254
49	4873	Development of Ms Excel Spreadsheet for Various Civil Engineering Estimation Work <i>Arbaz Kazi; Jay Jadhav; Kamal Vaishnav; Raj Samnerkarmohit Kumar Verma</i>	255-258
50	5871	Sustainable Planning and Design of Kelthan Village <i>Prathamesh Gondhalekar; Nitish Kambl;I Mohammed Faraz Ansari; Harshita Patil ;Vikrant Kothari</i>	259-263
51	6170	Alignment and Design of Elevated Railway Track at Dahisar - A Review <i>Abhiraj Kadam; Nirav Rathod Uday Ghodke; Swaraj Chavan ;Jaydeep Chougale</i>	264-266
52	6131	Study of Planning & Design of A Commercial Structure <i>Vedant Ayare; Tejas Adsule; Suraj Dogra; Suraj Dogra; Jaydeep Chougale</i>	267-272
53	5067	Comparison of Pavement Analysis Software's for Indian Scenario <i>Kevalkumar Chaudhari; Abhishek Phadatare; Amogh Raut; Siddhesh Jadhav ;Prakash Panda</i>	273-277



MULTICON-W 2023

- A platform for Multiple Conferences and Workshops

IC-AMCE 2023

14th International & National Conferences and Workshops

Certificate

APPRECIATION

This is to certify that Dr./Mr./Ms. Prakash Panda has presented / participated / contributed for a SLP length paper with the title Comparison of Pavement Analysis Softwares for Indian Scenario in the International Conference on Advances in Mechanical & Civil Engineering (IC-AMCE 2023) organized during February, 24th & 25th, 2023 at Thakur College of Engineering and Technology, Kandivali (E), Mumbai.

Dr. B. K. Mishra
Principal & Program Chair

Zagdu Singh Charitable Trust's (Regd.)

THAKUR COLLEGE OF ENGINEERING & TECHNOLOGY

Autonomous College Affiliated to University of Mumbai

Approved by All India Council for Technical Education (AICTE) and Government of Maharashtra

A - Block, Thakur Educational Campus, Shyamnarayan Thakur Marg, Thakur Village, Kandivali (East), Mumbai - 400 101

Tel.: 022-6730 8000 / 8106 / 8107 Telefax: 022-2846 1890 • Email: tcet@thakureducation.org

Website: www.tcetmumbai.in www.thakureducation.org

Comparison of Pavement Analysis Software for Indian Scenario

Kevalkumar Chaudhari
Department of Civil Engineering
Vidyavardhini's College of Engineering
and Technology (VCET)
Vasai (West), Palghar- 401 202
Kevalkumar.s204786105@vcet.edu.in

Siddhesh Jadhav
Department of Civil Engineering
Vidyavardhini's College of Engineering
and Technology (VCET)
Vasai (West), Palghar- 401 202
siddhesh.s204846112@vcet.edu.in

Abhishek Phadatare
Department of Civil Engineering
Vidyavardhini's College of Engineering
and Technology (VCET)
Vasai (West), Palghar- 401 202
abhishek.s204926112@vcet.edu.in

Amogh Raut
Department of Civil Engineering
Vidyavardhini's College of Engineering
and Technology (VCET)
Vasai (West), Palghar- 401 202
amogh.s2049366105@vcet.edu.in

Prakash Panda

Department of Civil Engineering
Vidyavardhini's College of Engineering
and Technology (VCET)
Vasai (West), Palghar- 401 202
prakash.panda@vcet.edu.in

Abstract — The nation's social, economic, and industrial development depends heavily on the road transportation system. Different vehicle classes use roads, which causes the pavement to fail due to early deterioration. Modern long-lasting pavements called perpetual pavements are made to survive for roughly 50 years without needing extensive renovation and only require periodic surface replacement. These kinds of pavements are excellent for building things like airports and significant motorways. The study and design of permanent pavements mainly follow the mechanistic empirical approach. When designing or analysing the performance of permanent pavements, various limiting values of strain for various pavement layers are taken into account. Fatigue cracking and rutting deformation are the main causes of bitumen pavement failure. This opened the door for the creation of software like IITPAVE and Kenpave, which calculate the values of stress and strain at crucial points in various pavement layers. This study focuses on comparing the results produced by using these softwares with the aid of data appropriate to the Indian context.

Keywords — Road Transportation, Motorway, Perpetual Pavement, Fatigue, Rutting, IITPAVE, Kenpave

I. INTRODUCTION

The design of flexible pavement substantially depends on strength and CBR value of the subgrade soil. The pavement design depends on colourful factors like wheel cargo, subgrade soil parcels, climatic factors, stress distribution characteristics of pavement accoutrements and environmental factors. Pavements are constructed as per IRC guidelines. The main reason for failure of bitumen pavement is due to inordinate strain and distortion at critical locales in the pavement.

The layers of flexible pavement consists of Surface course, binder course, base course, subbase course, frost protection course, subgrade. Flexible pavements contain bitumen or asphalt subcaste as wearing course and supports loads through bearing. They've low flexural strength. Wheel load strains can be spread out over a broader area thanks to the flexural strength of rigid pavements. Unlike flexible pavement, rigid pavement is installed directly on the prepared sub-grade or on a single layer of granular or stabilised material. Since there is only one layer of material between the concrete and the sub-grade, this layer may also

be referred to as the base or sub-base course. In rigid pavement, the slab action distributes force, and the pavement acts like an elastic plate resting on a viscous medium. Portland cement concrete is used to create rigid pavements (PCC).

MORTH (Ministry of Road Transport & Highways), IRC (Indian Road Congress), PWD (public workshop department) and other agencies. The original road networks were designed for lighter loads and lower business volumes than those which are present moment. As a result, the pavement structures are demanded to be enhanced performing in increased consumption of construction accoutrements and its backing. The general practice in India is to accommodate adding business to similarly increase the pavement consistence which results in uneconomical and environmentally unsustainable pavements. similar conservative designs ply a heavy fiscal burden on developing countries like India. The use of the perpetual pavement design conception and if possible, monitoring of these pavements to understand its superiority over conventional pavements is necessary for a sustainable pavement development in India. A Perpetual pavement is an asphaltic road designed to last for nearly 50 times without taking major structural recuperation or reconstruction. In India, not numerous sweats have been made in adaption of ultramodern perpetual pavements. Indian Road Congress, in one of its rearmost publications (IRC 37- 2012) is also championing use of mechanistic-empirical design for pavements and perpetual pavements and also suggested that the guidelines given in publication are conditional and detail field study is recommended for verification of guidelines which requires study of dynamic responses, it also indicates that the guidelines may bear a modification from time to time in the light of unborn developments and experience in the field. It's also suggested that all the associations intending to use the guidelines should keep a detailed record of the time of construction, subgrade CBR, soil characteristics including flexible modulus, pavement composition and specifications, business, pavement performance, overlay history, climatic conditions etc. and give feedback to the Indian Roads Congress for farther modification.

IITPAVE software is an advanced interpretation of FPAVE which is developed by exploration scheme R- 56 of MORTH. This multilayer analysis application is used to