STRUCTURA

A TECHNICAL MAGAZINE BY
DEPARTMENT OF CIVILENGINERING
AMBALIKA INSTITUTE OF MANAGEMENT & TECHNOLOGY

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Ambalika Institute of Management and Technology (AIMT) was established in 2008 as a private engineering and management college in (Mohanlalganj) Lucknow, Uttar Pradesh India and is affiliated to AKTU and BTE and Approved by AICTE. The Lucknow campus is spread over 200acresandislocatednear NH-56B,surrounded by lush greenfieldandenhancedbya beautifullake.Theinstituteis24 kilometers from Lucknow Railway Station and 20 kilometers from Amausi Airport, Lucknow. It is very well connected to the district headquarters.

Ambalika center of excellence has become the most dominating center delivering high-end technical skills to our engineers to make them highly employable. AIMT,Lucknowisimpartingtrainingandjointcertificationprogramsofinnovativetechnologiesin collaborationwith the Industry giants such as Microsoft, KUKA Robotics, Siemens, Ace Micromatics, MTab, and Master CAM etc.

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DEPARTMENTAL VISION

To create high quality civil engineers with knowledge par excellence whom any contribute in nation building with highest moral and ethical values as true citizens of a civilized society.

DEPARTMENT MISSION

To adapt teaching and learning process that gives student power to think and to analyze

To impart practical knowledge by means of lab exposure and industrial interaction

To conduct co-curricular activities for updation of technological advancement

To impart moral and ethical values by means of various programs

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HeadoftheDepartment

NAYNISH PANDEY

M.Tech(CivilEngineering) B.Tech
(Civil Engineering)

I am very pleased that we have successfully published the “July-2024” edition of our departmentalmagazine“BUNIYAAD”.Thetechnicalmagazineisacombinedefforto f the students, faculty members and the magazine team. It gives a overview of the major projectstaken up in the department. The Magazine article gives an insight of various aspects of Civil Engineering.ThisMagazinehasservedasaplatformtostudentsandmemberofthefaculties to present their unique ideas. The Magazine is a sincere effort to bridge the gap between theoreticalknowledgeandpracticalapplicationofCivilEngineering.

I would like to congratulate the editorial team and the members of faculty for working togetherasateaminpublishingthisMagazine.IhopetheMagazinere-energizestheperspectiveof CivilEngineeringandtheMagazineisaSuccess.

Contents

STUDENT'S SPACE

Performance Evaluation of Masonry-Infilled and Bare RC Frames under Varying Levels of Vertical Irregularity

Introduction -The study on **Performance Evaluation of Masonry-Infilled and Bare Reinforced Concrete (RC) Frames under Varying Levels of Vertical Irregularity** focuses on how irregularities in building height and stiffness distribution affect structural response during seismic or lateral loading.

Masonry infill walls, although often considered non-structural, significantly contribute to the **stiffness, strength, and energy dissipation** of RC frames. However, when vertical irregularities (such as soft storeys, floating columns, or sudden changes in mass/stiffness) are introduced, the performance of both **bare frames** (without infill) and **infilled frames** differs considerably.

- **Bare RC frames** show lower stiffness and higher lateral displacements, making them more vulnerable under seismic loading.
- **Infilled RC frames** provide additional stiffness and strength, but irregular distribution of infill (partial or absent in certain storeys) can lead to **soft-storey mechanisms**, concentration of damage, and premature failure.
- **Vertical irregularity level** directly influences seismic demand: as irregularity increases, the base shear distribution, inter-storey drift ratios, and overall ductility demand worsen.

- In filled frames with uniformly distributed masonry show better **global performance**, while irregular frames exhibit localized failures.
- Performance-based evaluation indicates that code provisions may underestimate the adverse effects of vertical irregularities, highlighting.

Ajaj Ahemad
B.TechCE-4thYear

AIR POLLUTION & CLIMATE

Introduction - Air pollution and climate change are closely linked environmental challenges. Air pollutants such as carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), sulfur dioxide (SO_2), nitrogen oxides (NO_x), ozone, and particulate matter (PM2.5, PM10) **contribute both to deteriorating air quality and to global climate change. Major sources include** industrial emissions, vehicular exhaust, agricultural practices, biomass burning, and energy production**.**

These pollutants trap heat in the atmosphere, leading to global warming, melting of glaciers, sea-level rise, shifting rainfall patterns, and extreme weather events**. Air pollution also directly impacts human health by causing** respiratory and cardiovascular diseases**, reduces agricultural productivity, and damages ecosystems through acid rain and ground-level ozone.**

Mitigation requires a combined approach: adoption of renewable energy**, promotion of** sustainable transport**,** pollution control technologies**, stricter** environmental policies**, and global cooperation through frameworks like the** Paris Agreement**. Addressing air pollution effectively supports both** public health protection **and** climate change mitigation

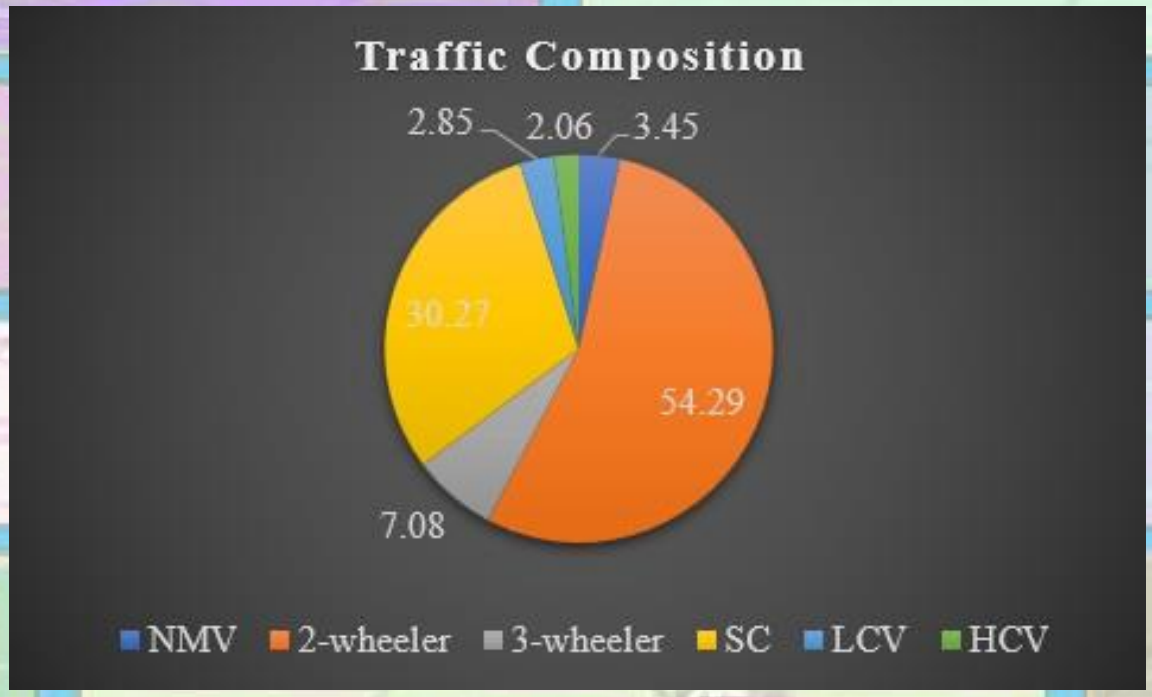
Rishu Gautam
B.TechCE-4thYear

FACULTY WISDOM

Assessing Stream Speed under influence of On-street Parking

Naynish Pandey
M.TECH(Transportation Engg)
B.Tech(CIVILENGINEERING)

Need of Study: Stream speed pattern of traffic plays a crucial role in urban transportation. The presence of on-street parking significantly reduces this speed by narrowing the carriageway width available for traffic movement, impeding the traffic flow. Therefore, understanding the traffic flow behavior in the context of on-street parking could be challenging. In this context, the present study explores the influence of on-street parking on the stream speed of regular traffic. To achieve this, data were collected at various ideal and parking sections. The stream speed ranges from 39.28 to 51.47 km/h for ideal sections with significant percentage reduction observed at parking sections, ranging from 39.09-81.30%. This speed reduction was then modelled considering the most significant parking parameters conceptualized in this study. The findings of the study offer valuable insights that can be implemented for developing the on-street parking norms.



A methodology to estimate the stream speed of the parking section is proposed in the present study. The study conceptualizes the most efficient parking parameters influencing the stream speed of the vehicles. These parameters were compatible with the Indian traffic context. Below are the major findings of the study.

- The speed at parking sections was significantly reduced in the presence of on-street parking that highlights the importance of considering parking maneuvers and parking width in data analysis. This decline varies within a wide range of 39.09-81.30 %.
- A speed reduction model was by considering two major parking parameters, which predict the impact of on-street parking on stream speed. Further, the developed model can be a valuable tool for urban planning and designing.
- A favorable agreement (-8.422% error) was established between the speed derived from the data extraction and the speed reduction model, which suggests that the proposed model can

accurately estimate the stream speed at the parking sections with varying intensity of on-street parking.

- The findings provide valuable insights for developing norms regarding on-street parking facilities whether on-street parking can be prohibited or allowed and if it is allowed then up to what extent? The model also reveals how the stream speed of vehicles at parking sections enhances or declines in the presence or absence of on-street parking.
- The proposed model can be helpful for urban transportation planners for easy estimation of stream speed at parking sections saving valuable time in the data extraction process.
- The methodology adopted in this research can be further implemented in future to extend the work and explore the impacts of different parking patterns such as angled or perpendicular on the stream speed. Additionally, this research also provides suggestions to examine the driver's behavior when vehicles are parked in designated bays or on the roadside.

In summary, the present study can be effective for urban transportation planners, while providing parking regulations. The proposed model offers a straightforward approach for estimating the stream speed under varying intensities of on-street parking, providing valuable insights for the traffic management and urban transportation planning efforts. This research contributed to better understanding of on-street parking and stream speed which offers practical solutions to overcome traffic congestion in urban areas.

Future scope of the study

This study opens several avenues for further research to deal with the impacts of on-street parking on stream speed.

- The type of on-street parking, whether unregulated or with designated parking bays, may instigate a considerable difference in the impact of on-street parking on the regular traffic flow. The impact is expected to be reduced in the case of a designated parking bay as

compared to an undesignated parking bay. However, the designated parking bay on a collector type of road is not common in India. Hence, comparing the impacts of unregulated parking with the designated parking bays is beyond the scope of the present study. Nevertheless, this comparison will be interesting to see and can be investigated in future studies.

- The type of on-street parking (parallel, angled or perpendicular) may play a significant role in determining its impact on the stream speed. However, considering the fact that the parallel parking is the most commonly found parking type on Indian urban roads, the same has been adopted in the present study. Nevertheless, comparing the impacts of different parking types can be a meaningful venture and will be taken up in future studies

Naynish Pandey
Assistant Prof.
DepartmentofCE

CREDITS

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CHAIRMAN'S MESSAGE

It gives me immense pleasure to introduce our Technical Magazine "BUNIYAAD" from Dept. of CivilEngg. will be published bi- annually. Our students are very innovative and ever eager to learn new concepts. Apart from teaching, our faculty members are deeply engaged in research work. Our faculty and students regularly present their research findings in various academic conferences. It will help the documentation culture of the institute. One of our greatest strength is our highly qualified and dedicated faculty members and staff. I congratulate the editorial team, faculty, staff members and students for their contribution in the maiden issue of "BUNIYAAD". It is an attempt of the Technical Magazine to acquaint its readers with the Technological updation in the field of Civil Engineering.

Mr. Ambika Mishra
Chairman
Ambalika Group of Institutions

DIRECTOR'SMESSAGE

I feel honored and grateful to start the latest edition of our Technical Magazine "BUNIYAAD" from Dept. of Civil Engineering. This magazine will serve to reinforce and allow an increased awareness in the field of Civil Engineering and an improve interaction among all of us. It will not only serve the objective of creating responsiveness but will give a platform to new ideas, progress and creativity. I do hope that it will encourage faculty, students and others to contribute regularly in making our newsletter a success and may it acquire greatheights in the years to come.\

Dr. Ashutosh Dwivedi
Director
Ambalika Group of Institutions

ADDITIONAL DIRECTOR'S MESSAGE

I am privileged to introduce the latest edition of our esteemed Technical Magazine, "BUNIYAAD" from the Department of Civil Engineering. This publication stands as a testament to our collective dedication to advancing knowledge and fostering innovation within our field. It aims to not only enhance our understanding of Civil Engineering but also to strengthenthe bonds among us as a community.

Through this platform, we aspire to inspire creativity, share pioneering ideas, and showcase progress. I am confident that this magazine will continue to serve as a beacon for excellence, encouraging regular contributions from our faculty, students, and colleagues. Let us work together to ensure its continued success and propel it to even greater heights in the years ahead.

Dr. Shweta Mishra
AdditionalDirector
AmbalikaGroup ofInstitutions

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