

The Perception of Second-Language English Emotional Onsets by Native Mandarin Speakers

K. Ganga Bhavani Gowri (M.A)¹, D. Mamatha (M.A)², L. Sudha (M.A)³

Assistant Professor^{1,2,3}

ABSTRACT

This article presents the results of an experiment that tested the ability of native Mandarin speakers to distinguish between the /t/ and /t/ affricate onset contrasts in two vowel contexts (/I/ and /u/) in English. Specifically for the lengthy voice of onset (VOT) contrast, /t/-/t/, the results imply that vowel quality increases discriminating accuracy, and that /u/ generates a challenging situation for Mandarin listeners. Rich information regarding online processing throughout the identification method was revealed by mouse-tracking data, and various metrics demonstrated a substantial influence of vowel context, which was in accordance with the findings from the discriminating challenge. VOT may have a more subtle function than vowel context, as shown by the fact that it was not observed to influence cursor movements during identification, in contrast to the findings of discriminating.

Keywords: affricate, perception, Mandarin, mouse-tracking.

INTRODUCTION

The English /t/-/t/ contrast, for example, is notoriously difficult for native Japanese listeners to accurately perceive [1]. Perceiving unfamiliar non-native and second language (L2) consonants can be difficult for listeners, especially when certain consonants form phonemic contrasts in the L2 but not in the listener's native language (L1). Dissimilarities between L1 and L2 inventories are the root cause of many events of this kind [2]. Non-native category confusions can be influenced by phonological and phonotactic contexts, as shown by additional research [3, 4]; for example, L1 English and L1 French listeners are unable to accurately perceive */to/-/kl/ and */dl/-/l/ contrasts because both */to/ and */dl/ are unattested sequences according to English or French phonology. Comparing the relative ease of */dl/-/l/ and */to/-/kl/, a thorough examination of such patterns suggests that voice onset time (VOT) may play a role in the former. In line with this observation, a recent study [5] demonstrated that L1 Japanese listeners' perception of the English /s/-/s/ contrast is conditioned by the nucleus vowel context: whereas Japanese listeners perform well in discriminating */us/-/u/, they perform significantly worse in discriminating */is/-/i/, where the non-native sequence is unattested in the L1. These investigations show that vowel context, phonotactic quality of the sequence (unattested vs. attested), and maybe voicing specification of the plosives of the contrast (long- vs. short-lag) all have a role in how L2 consonant onsets are perceived. Since English /t/-/t/ and /d/-/d/ diphone contrasts have been reported to be difficult for Mandarin listeners [6, 7], the current research explores how L1 Mandarin speakers understand these contrasts. However, the role that phonological context plays in the processing of these two contrasts is still unclear. Even though the phonological realizations of English /t/ and /d/ are stop-rhotic sequences, their phonetic realizations are more akin to affricate-rhotic sequences [8]. The Chinese language has a rhotic category (/r/) and both long- and short-lag affricates (/t, d/). Affricate-/w/ sequences are allowed in Mandarin phonology, whereas affricate-rhotic sequences are not [9]. Therefore, Mandarin speakers may hear the English phonetic affricate categories /t, d/ as foreign, while they hear the English /t, d/ as native. Understanding how sensitive Mandarin listeners are to labial (rounding) and lingual (narrowing) motions connected with the /r/ segment in unknown phones is the focus of the current investigation. If Mandarin speakers are unable to hear the rhotic segment at the start, they may confuse the sounds /t, d/ with the English sounds /t, d/ since they are phonologically and phonotactically equivalent. As an alternative, Mandarin listeners may use some (but not all) of the gestural clues in perception, such as focusing on the labial motion and mistaking English /t/ for the Mandarin sequence /tʷ/. This is confirmed by examples found in the adaptation patterns of Mandarin loanwords, such as the adaptation of the English name Trump as /tʷan-pu/. If this is the case, then the perception of /t/-/t/ in English will be mapped to /tʷ/ in Mandarin, allowing for correct discrimination of unknown categories even when just auditory and gestural clues are available. Mandarin speakers who heavily rely on 2.2. Stimuli the labial gesture (i.e., replacing /r/ with /w/) may still have trouble perceiving /t/-/t/ when the following segment also has the [+labial] feature, such as a rounded vowel (/u/) due to anticipatory coarticulation; in this case, it would be difficult to differentiate between the two affricate categories. In contrast, the labial motion is supposed to be at its most noticeable when an unrounded vowel like /i/ is used (because only /ti/ will be formed with the labial gesture). Accordingly, we anticipate that the vowel context will affect Mandarin listeners' ability to discriminate between and correctly identify English /t/ and /d/, with /u/ resulting in poor discrimination and identification and /i/ resulting in more accurate perception.

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PETTURIVARI PALEM
MARRASARAPET (R.D), GUNTUR (D)



IJARST

International Journal For Advanced Research In Science & Technology

A peer reviewed international journal

www.ijarst.in

ISSN: 2457-0362

A COMPARISON OF MARSHAL PROPERTIES IN HIGHWAY DESIGN FOR DIFFERENT SOILS IN INDIA

Anil M¹, K.Sreekar Chand²

¹ M. Tech Transportation engineering, Department of Civil Engineering, AM Reddy Memorial College of Engineering & Technology, Narsaraopeta-522601

² Associate professor, Department of Civil Engineering, AM Reddy Memorial College of Engineering & Technology, Narsaraopeta-522601

ABSTRACT:

To develop a design guide to help highway engineers in India improve design and construction of pavement on expansive subgrades, thereby extending road life. Expansive soils as road subgrade in India have been contributing to pavement failures and subsequently causing increased annual maintenance expenditure. In India use of bitumen content since many year ago. Although these first mixture proved as a successful as a pavement material, they were not design any proper mix design method. As a knowledge regarding paving material expanded need for more economical, functional and safer design criteria should require to find out optimum bitumen content in semi dense bitumen macadam. To satisfy the mix design specification, number of methods have been developed. The present paper aims to highlight this variability involved in the asphalt mix design process and develop a

procedure to find out optimum bitumen content by Marshall mix design method which attain maximum stability. This study is based on Indian specifications, where mix design, like in many other countries, is performed in accordance with Marshall Method. The main objective of the research work is to improve the properties of the soil by adding Bitumen emulsion in soil. That is used as sub-grade in the construction of the road. In the research bitumen emulsion is used in the proportion of 0%, 5%, 10% and 15% in the soil. And for the strength properties, the CBR test is done on the soil mix with emulsion. Many other tests like Liquid limit and compaction test is done on the soil at different bitumen emulsion proportion. As a result bitumen emulsion gives good strength results as used in soil. It can be useful for rural pavements. For the aim of the research to encourage the use of bitumen emulsion for the soil stabilization and explored the



IMPACT OF MAGNETIC FIELD ON AN OSCILLATORY FLOW OF A NON-NEWTONIAN FLUID WITH RADIATION AND HEAT GENERATION

G. Bhaskar Reddy^[a], K. Malleswari^[b], K. Venugopal Reddy^[c], Ch. Shashi Kumar^{*[d]},
Y. V. Seshagiri Rao^[e], Dr. Nookala Venu^[f]

Article History:

Received: 25.06.2023

Revised: 29.07.2023

Accepted: 02.09.2023

Abstract

An anticipated outcome that is intended paper is to investigate impact of magnetic field on an oscillatory flow of a non-Newtonian fluid with thermal radiation and heat generation bounded by a vertical plane surface have been studied. Analytical solution for quasi-linear hyperbolic partial differential equations is obtained by using perturbation technique. Solution for mean velocity and mean temperature profiles for various combinations of parameters were discussed through graphically by using MATLAB code.

Keywords: Thermal radiation, oscillatory flow, Heat transfer, Magnetic field

DOI: 10.48047/ecb/2023.12.11.56

^[a]Department of Science & Humanities, A.M. Reddy Memorial College of Engineering and Technology, Narasaraopeta, Andhra Pradesh, India

Email: drgbhaskarreddy@gmail.com

^[b]Department of Mathematics, Malla Reddy Engineering College (Autonomous), Maisammaguda, Kompally (Mandal), Medchal Malkajgiri (Dist)-500100, Telangana, India

Email: malleswarik1989@gmail.com

^[c]Department of Mathematics, Anurag University, Venkatapur (V), Ghatkesar (M), Medchal Malkajgiri (Dist.), Hyderabad, Telangana, India

Email: venugopal.reddy1982@gmail.com

^{*[d]} Department of Mathematics, VNR Vignana Jyothi Institute of Engineering & Technology, Hyderabad- 500090, Telangana, India

Email: skch17@gmail.com

^[e]Department of Basic Sciences & Humanities, Vignan Institute of Technology and Science, Deshmukhi (V), Pochampally (M), Yadadri-Bhuvanagiri (Dist), Telangana-508284, India

Email: yangalav@gmail.com

^[f]Assistant Professor, Internet of Things (IoT), Offered by Department of IT, Madhav Institute of Technology & Science, Gwalior - 474 005, Madhya Pradesh, India, (A Govt. Aided UGC Autonomous Institute).

E-Mail: venunookala@mitsgwalior.in

Principal
A.M REDDY MEMORIAL COLLEGE OF
ENGINEERING & TECHNOLOGY
PETLURIVARI PALEM
Narasaraopet (Mdl), Guntur(Dr .

SHEAR BEHAVIOUR OF HYBRID FIBER REINFORCED GEOPOLYMER CONCRETE BEAMS

Shaik Boggula Nagur Vali¹

P.G. Scholar (Structural Engineering)

AM Reddy Memorial College of engineering and Technology

Vinukondaroad Petlurivaripalem, Narasaraopet, Andhra Pradesh, 522001.

ABSTRACT: Concrete is the most common material for construction. The demand for concrete as a construction material leads to the increase of demand for Portland cement. Concrete is known as a significant contributor to the emission of greenhouse gases. The cement industry is the second largest producer of the greenhouse gas. The environmental problems caused by cement production can be reduced by finding an alternate material. One of potential material to substitute for conventional concrete is geopolymer concrete. Geopolymer concrete is an inorganic aluminosilicate polymer synthesized from predominantly silicon, aluminium and by product materials such as fly ash, GGBS (ground granulated blast furnace slag). Geopolymer concrete does not contain cement. Hybrid fibres were used in this study. Hybrid fibre is the combination of steel fibre and basalt fibre with different volume fractions. When these fibres are added to this special concrete it improves the ductile behaviour and energy absorption capacity. This is due to the property of steel and basalt fibre to bridge the crack development inside the concrete. The main objective of the study is to look into the shear behaviour of hybrid fibre reinforced geopolymer concrete beams.

Test specimens of 1200×150×100 mm size were used for the study. 20-30% of Fly ash by the mass was replaced by GGBS. The variable

M.Mounika² M.Tech

Assistant Professor (Civil Engineering Department)

used were percentage of steel fibre volume fraction viz. 0.0%, 0.5%, and 1%, and basalt fibre volume fraction viz. 0.0%, 0.15%, and 0.3%. The concentration of sodium hydroxide was 12Molar and 14 Molar in geopolymer concrete. For curing, temperature was fixed as 600 C for 24 hours. The geopolymer specimens were cured by using steam curing chamber. The specimens were cured after the rest period of three days. A trail and error process was used to obtain proper mixture proportion for geopolymer concrete. The specimens were tested after the age of 7 days. The obtained results of Fly ash and GGBS - based hybrid fibre geopolymer concrete (F&GHGPC) specimens were compared with the only Fly ash-based hybrid fibre geopolymer concrete (FHGPC) specimens. Test results shows that first crack load, ultimate load, energy absorption capacity, experimental shear strength and ductile characteristic of F&GHGPC geopolymer concrete specimens were higher than the FHGPC geopolymer concrete specimens.

INTRODUCTION: The global use of concrete is second only to water. As the demand for concrete as a construction material leads to the increase of demand for Portland cement. Concrete is a mixture of Portland cement, aggregate, and water. Concrete is the most commonly used material in the world because of its outstanding strength, durability

A STUDY ON ACID RESISTANCE BEHAVIOR OF SELF-COMPACTING CONCRETE BY PARTIAL REPLACEMENT OF CEMENT BY FLY ASH

Nuthalapati Venkatesh¹

P.G. Scholar (Structural Engineering)

Sk.Dhilshad² M.Tech

Assistant Professor (Civil Engineering Department)

AM Ready Memorial College of engineering and Technology

Vinukondaroad Petlurivaripalem, Narasaraopet, Andhra Pradesh, 522001.

ABSTRACT :- The compaction of concrete is one of the prominent factors to be considered to obtain the desired strength of the concrete. The mechanical vibrators are mostly used in the site for compaction of the concrete. But, compactions are not done properly in sites and this affects the strength and durability properties of the concrete. The concrete that flows by its own weight is named as Self-Compacting Concrete (SCC). The flow ability of conventional concrete can be improved by developing or introducing self-compacting concrete. But the cost of SCC is very high due to the high cementitious content and super plasticizer. This high cost can be brought down by using the Supplementary cementitious materials (SCMs). Very fine particle size of these SCMs enables pore refinement in the concrete and subsequently improves both the mechanical and durability properties of the concrete.

The ternary blended concrete is produced by combining of two SCMs and substitute in concrete as a partial replacement for the cement. The shortcomings in one of the SCMs can get counteracted by other SCM when they are blended. However, the SCC is a brittle material with low tensile stress and impact strength.

This study is mainly focused on the development of ternary blended self-compacting concrete with supplementary cementitious materials. Ternary blended SCC mix (TBC9) containing 70% of Ordinary Portland Cement, 20% of fly ash, and 10% of silica fume has enhanced the mechanical and durability properties of SCC. Therefore TBC9

mix was considered as the optimized mix. The alkali-resistant glass fibers were added with the optimized mix (TBC9).

I INTRODUCTION

The concrete is one of the broadly used building materials in the world. The casting of concrete is a very simple method by mixing some locally available cement, fine aggregate, coarse aggregate and water which attains some required strength. However, the fresh and the hardened properties of un-designed concrete are unpredictable and it creates considerable issues in all aspects pertaining to the properties of the concrete.

The compaction of concrete is one of the prominent factors to be considered to obtain the desired strength of the concrete. The mechanical vibrators are mostly used in the site for compaction of the concrete. But, compactions are not done properly in the sites and this affects the strength and durability properties of the concrete. To overcome all these defects due to compaction, a new concrete is developed which is called as Self-Compacting Concrete (SCC).

Supplementary Cementitious Materials (SCMS):-

The supplementary cementitious materials are suitable alternative material for the cement. The cost of SCC is very high due to the high cementitious content (300 – 600 kg/m³) as per EFNARC-2005 and super plasticizer. This high cost can be brought down by using the natural (metakaoline, RHA, etc.,) and artificial (fly ash, silica fume, GGBS etc.,) SCMs. Very fine particle size of these



Examination of Intelligent Transportation System Its Routing Protocols

Akana Jagadeesh¹, K.Sreekar chand²

¹M.Tech Student, Transportation Engineering, A.M. Reddy Memorial College Of Engineering And Technology, Petturivaripalem, Palnadu (Dt.) 522601, Andhra Pradesh. Email: akanajagadeesh@gmail.com

²Associate professor and HOD, Civil Engineering, A.M. Reddy Memorial College Of Engineering And Technology, Petturivaripalem, Palnadu (Dt.) 522601, Andhra Pradesh

ABSTRACT

The networking procedure is evolving to make consumers more comfortable as technology is improving daily. A new adhoc network called the Vehicular Adhoc Network was created specifically for this purpose in the last few decades to give safety and comfort-based applications to the users while driving (VANET). This is a sort of networking between moving cars on the road that connects automobiles close to one another so that they may share information. Although VANETs are a particular type of MANET, routing protocols designed for MANETs cannot be easily applied to VANETs due to their unique set of limitations. Topology-based routing protocols were the sole form of routing protocol taken into consideration in earlier research on VANETs, however this type of protocol was not appropriate for VANETs, leading to the introduction of other types of routing protocols. A number of writers have categorised the routing protocols for VANET in a variety of ways, making the list of these protocols rather long. Understanding the bulk of these procedures is necessary to begin working in this sector. Therefore, before testing and certification, routing protocols created for VANETs cannot be applied directly in automobiles. As a result, simulation is utilised to examine various VANET-related metrics such as packet delivery ratio, end-to-end latency, packet loss, etc. Today's simulators come in a variety of varieties, each of which has pros and downsides. Choosing a simulator that produces outcomes as near to reality as feasible is thus required once more. Hence, keeping the aforementioned two variables in mind, the current analysis offers insight into the routing strategies employed by VANETs, their classification based on various factors, the benefits and drawbacks of VANETs, and how various methodologies are utilised to address those drawbacks.

In the current study, hybrid routing protocols in VANETs have been introduced. Hybrid approaches will be introduced and developed in VANETs, allowing for greater scalability and better service quality.

Keywords: VANET, AntHocNet, Hybrid routing protocol

1.INTRODUCTION

With time restrictions in mind, a large population has been using automobiles and other private vehicles as their primary mode of transportation for the past few decades. This has greatly increased the amount of road traffic density, which has led to the emergence of several new issues in the current, digital era. Moreover, this has led to more annual traffic accidents, gridlock, and greater energy usage. Moreover, excessive automobile use pollutes the air and has a bad effect on the environment. All of this has spawned a brand-new area of study that is more focused on passenger safety and traffic efficiency. Vehicle-to-vehicle networks are also referred to as "vehicular ad hoc networks" (VANETs). According to several studies (Morris et al., 2000; Yousefi et al., 2006; Hartenstein and Laberteaux, 2009; Campolo et al., 2015), it is one of the most promising answers to this problem. Road Side Units (RSUs) and moving cars, which serve as nodes in a VANET, interact with one another using methods that don't need infrastructure. Some uses suggested by VANETs include enhancing traffic efficiency and safety.

The numerous communications need of ITS applications, such as latency, average delay, bandwidth, coverage, and many other performance parameters, are frequently handled via VANETs. The architecture of the VANET, several communication domains, and corresponding radio access methods are given in the next subsection.

According to [Yang and Xin, 2015; Jiang et al., 2014; Saini et al., 2014], a VANET system has three basic parts:

- On Board Unit (OBU)
- Road Side Unit (RU)

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PETTURIVARI PALEM
Narasaraopet (Mdl), Guntur(Dt.)



Construction of A Theoretical Framework for Performance Metrics for Road Safety

Raisidam Shivakumar¹, K. Ramu²

¹M. Tech Student, Transportation Engineering, A.M. REDDY MEMORIAL COLLEGE OF ENGINEERING AND TECHNOLOGY, Petturivaripalem, Palnadu (Dt.) 522601, Andhra Pradesh.

²Assistant Professor, Civil Engineering, A.M. REDDY MEMORIAL COLLEGE OF ENGINEERING AND TECHNOLOGY, Petturivaripalem, Palnadu (Dt.) 522601, Andhra Pradesh

ABSTRACT

Public health, social, economic, and transportation issues are all greatly affected by road safety. A staggering 1.35 million individuals die and many more suffer injuries in vehicle accidents each year [2,3]. Modern road safety programs lack a comprehensive, coherent set of elements and policy tools that are supported by theoretically sound concepts. The objective of this thesis was to improve road safety measures by making them more pertinent, efficient, effective, and adaptive to changing circumstances and futures.

Road traffic accidents are a tragic human event that significantly harms people. Early deaths are a huge socioeconomic cost associated with them. Potential profits are lost as a result of injuries. The effects of an automobile accident can be severe, having an impact not only on the economy but also on people's health and well-being. As a result of road accidents, 3,000 individuals lose their right to life every day. Global humanitarian disaster that was caused by humans [3].

1.35 million people died in traffic accidents in 2018, according to the World Health Organization, which is comparable to all communicable disease mortality [2,3]. The most vulnerable group is the young, and it has been shown that deaths from traffic accidents are among the top three global causes of death for those between the ages of 5 and 44. If effective measures to minimise road fatalities and injuries are not taken, according to the WHO (2018), road traffic accidents will rank as the sixth leading cause of mortality worldwide by 2030, impacting an estimated 2.4 million families each year [3]. With 48% of the world's registered autos, low- and middle-income countries account for almost 90% of road fatalities [2]. Road traffic injuries are a major issue due to a huge growth in the quantity of automobiles and people using dangerous roads. Professionals and policymakers are interested in this topic because of the remarkable increase in mobility, morbidity, disability, and socioeconomic effects from accidents during the past ten years.

The quantity of traffic on the roadways has been growing recently, which has raised the likelihood of traffic accidents. Road traffic accidents are the fifth most major cause of mortality worldwide, according to evidence from both industrialised and developing nations, and they are on the rise. They are responsible for a sizable part of injuries, fatalities, and impairments among the population

As a result, the current effort will give organized information on the establishment of a theoretical framework for performance metrics for road safety. Indicators are instruments for tracking the progress of a certain phenomenon. They communicate scientific knowledge in a clear and pertinent way. Indicators may be used for a variety of purposes, including defining goals and priorities, recognizing trends, assessing the effectiveness of policy initiatives, and gauging relative performance. This makes it obvious how important indicators are for the field of road safety.

Keywords: Road accident, Road safety, Framework

I. INTRODUCTION

1.1 GENERAL

Almost all facets of economic, social, and cultural growth require transportation. Any nation, but particularly one that is expanding like India, needs the road transportation industry to grow. The Indian economy now heavily depends on the road transportation industry. The backbone of the Indian economy is road transportation. The internal road network, which includes of major district roads, village roads, national highways, and state highways, effectively transports people and products. When it comes to moving both people and goods, the country's surface transportation system heavily relies on the road. Around 60% of the goods and 80% of the passengers in India are transported by road. India is home to the third-largest road network in the world, with a total length of 6,215,797 kilometres [1]. The orderly flow of people and products on various types of highways is referred to as traffic management. As a result, traffic laws and their enforcement are essential worldwide and play a crucial role in traffic management.

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PETLURIVARI PALEM
Narasaraopet (Mdl), Guntur(Dt.),

Flexible Pavement Design and Subgrade Characteristics Strength

Avula Venkata Krishna Reddy¹, K. Ramu²

^{1,2} Dept of Civil Engineering

^{1,2} AMREDDY Memorial College of Engineering and Technology.

Abstract- The Salwala – Gojjar Road OSR-05 under study is located in the Northern part of India (Himachal Pradesh). The said road serves the tourists in commuting to Himalayas, hill stations (Shimla, Manali, Dharamshala, Dalhousie, Chamba, Khajjiar, Kullu and Kasauli) as well as 9 Devi Temples of Himachal Pradesh and Jammu region. In view of this, it has been proposed to develop the road as per standards for augmenting the capacity of design traffic with significant service life.

In the current study for the flexible new pavement design, we have considered the parameters such as volume of traffic, growth rates and Vehicle Damage Factors (VDF) as well as evaluated soil and materials of the existing road to identify the existing strength of pavement and also to characterize the various layers of pavement materials in design. Existing Intermediate lane is structurally poor in condition as well as heavy distresses, so failing under rutting criteria which shows deficiency in granular layers. Hence it is recommended for reconstruction over entire project road with Design Option-III i.e., Design of Bituminous Pavements with Cemented Sub-Base (CTSB) and Granular Base course (WMM).

I. INTRODUCTION

Design Procedure of Flexible Pavement Design:

Flexible pavement is modelled as an elastic multilayer structure. Stresses and strains at critical locations are computed using a linear layered elastic model (Figure 1). The stress analysis software IITPAVE has been used for computation of stresses and strains in flexible pavements. Tensile strain, ϵ_t , at the bottom of the bituminous layer and the vertical sub-grade strain ϵ_v , at top of the sub-grade are conventionally considered as critical parameters for pavement design to limit cracking and rutting in the bituminous layers and non-bituminous layers respectively.

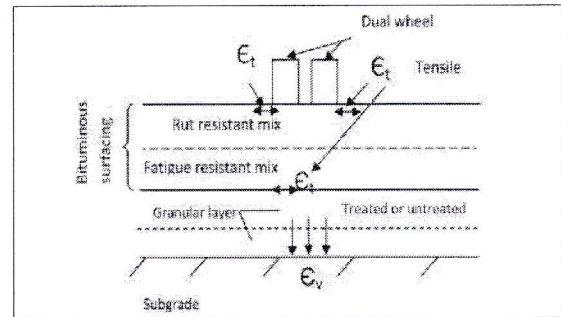


Figure 1: The different stresses and strains in a flexible pavement.

IRC method for pavement design is based on limiting the vertical compressive strain on top of sub-grade which results in permanent deformation of the pavement and the horizontal tensile strain at the bottom of the bituminous layer which results in cracking of the pavement. The relationships governing the above two pavement failure criteria are expressed as:

Fatigue Model: With every load repetition, the tensile strain developed at the bottom of bituminous layer develops micro cracks, which go on widening and expanding till the load repetitions are large enough for the cracks to propagate to the surface over an area of the surface that is unacceptable from long term serviceability of the pavement point of view. The phenomenon is called fatigue of the bituminous layer and the number of load repetitions in terms of standard axles that cause fatigue denotes the fatigue life of the pavement. The two equations for the conventional bituminous mixes designed are given below:

$$N_f = 1.6064 \times C_x \times 10^{-4} (1/\epsilon_t)^{3.89*} (1/MR)^{0.854} \quad (80\% \text{ Reliability})$$

$$N_f = 0.5161 \times c_x \times 10^{-4} (1/\epsilon_t)^{3.89*} (1/MR)^{0.854} \quad (90\% \text{ Reliability})$$

Where,

N_f = Fatigue life in number of standard axles

ϵ_t = Maximum tensile strain at the bottom of the bituminous layer, and

EXPERIMENTAL STUDY ON CONCRETE USING IRON POWDER AND METAKAOLIN

Jajam Venkata Srilakshmi¹

P.G. Scholar (Structural Engineering)

G.Madhavi ^{M.Tech} ²

Assistant Professor (Civil Engineering Department)

AM Reddy Memorial College of engineering and Technology

Vinukondaroad Petlurivaripalem, Narasaraopet, Andhra Pradesh, 522001.

ABSTRACT :- Then in this study, the industrial wastes similar as, metakaolin and iron powder are incompletely replaced as cement and beach independently in concrete. Every time, a large quantum of metakaolin and iron powder is emitted from these diligences. Numerous inquiries have been done by using these accoutrements collectively or double composites. Then in this study, all of these three accoutrements are used contemporaneously in each blend at different proportions to upgrade the strength parameters of concrete. In addition the favorable physico-chemical characteristics of the relief accoutrements, the strength parameters of concrete are enhanced. The relief of artificial wastes in concrete gives environmental, specialized and profitable benefits to concrete timber. Entire relief of the waste accoutrements doesn't give sufficient strength to concrete. Thus incompletely relief gives significant strength to fresh and toughened state of concrete similarly; the fresh and toughened concrete parcels are remarkably bettered by partial relief of the artificial wastes for cement and beach. For optimum replacement of the waste accoutrements, the lesser strength is gained appreciably.

In this present work, seven composites (including control blend) of M30 grade concrete named MC1, MC2, MC3, MC4, MC5, MC6, MC7, MC8 is produced. The water binder rate is 0.38 and mix rate is 11.633.18. The chance of superplasticizer is 0.75 by the weight of cement. The maximum and minimal relief of Metakaolin as cement is 5 and 20. The plasticity is plant for studying fresh concrete property. The toughened

concrete parcels similar as compressive strength, resolve tensile strength, flexural strength, are examined. The depression values are attained for studying about plasticity property. The compressive strength is carried out for 14, and 28, days. The split tensile strength and flexural strength are carried out for and 28, days. The iron greasepaint has glassy face and low water immersion than beach which diminishes the water demand up to particular chance relief. The super plasticizers are included for prostrating the rise of water demand effect. The junction effect of these three relief accoutrements and SP generates the concrete more workable than control concrete. The maximum compressive strength is attained for the blend of MC3 retaining 10 metakaolin and MC6 retaining 10 metakaolin and 20 iron powder at all periods of concrete. The advanced split tensile strength, flexural strength are gotten for the concrete blend MC6, 10 metakaolin and 20 iron powder at all periods.

I INTRODUCTION

The most commonly used construction material is concrete due to its low cost, availability and durability. Generally the constituents of concrete are cement, sand, coarse aggregate and water. Sometimes, the mineral admixtures and chemical admixtures are additionally added in concrete for upgrading its mechanical, durable and microstructure properties of concrete. In this present study, the fine aggregate and cement are partially replaced by some industrial products which are hazardous to our environment. Our environment infected while



DEVELOPMENT OF FLEXIBLE PAVEMENTS OVER EXPANSIVE SOILS , ALTERNATIVE MATERIALS USED TO IMPROVE THE SUBGRADE AS WELL AS THE BITUMINOUS LAYER

Azmeera.ArunKumar¹, K.Sreekar Chand²

¹ M. Tech Transportation engineering, Department of Civil Engineering, AM Reddy Memorial
College of Engineering & Technology, Narsaraopeta-522601

² Associate professor, Department of Civil Engineering, AM Reddy Memorial College of
Engineering & Technology, Narsaraopeta-522601

Abstract:

Waste PVC that has been used previously as mineral water bottles, pipes, electrical fittings etc. are biologically non-degradable and posed an ominous environmental problem which led to severe environmental impact. But molten PVC has a binding property which can be reused with bitumen to reduce the cost of bituminous mix. At the same time the recycling of waste PVC save disposal sites to reduce the amount of inert drawn from quarries which often lead to environmental problems. This paper describes the investigation of the properties of bitumen mixed with PVC (2.5%, 5%, 7.5%, 10%, 12.5%, 15%, 17.5% and 20% by the weight of bitumen) at optimum bitumen content and to check the design criteria of bituminous mixes using this bitumen-PVC binder The investigation concentrated on the test of modified

binder properties and Marshall Mix design was used, first to determine the optimum binder content and then further to test the modified mixture properties. The tests include the determination of unit weight, stability, flow and voids characteristics. Some of the measured properties of asphalt mixture with the modifier used in this study were within the acceptable recommended limits. On the basis of experimental results, it is concluded that the asphalt mixtures with waste polyethylene modifier up to 10% and waste PVC modifier up to 7.5% can be used for flexible pavement construction in a warmer region from the standpoint of stability, stiffness and voids characteristics.

INTRODUCTION

the forefront invention of Polyethylene and Polyvinyl chloride (PVC), it has been spasmodically used in every

ENGINEERING PROPERTIES OF WARM MIX ASPHALT USING SYNTHETIC ZEOLITE AS AN ADDITIVE

¹ V V N S Vijaya Kumar A, ² K.Sreekar chand

¹M.Tech Student, Transportation Engineering, AM REDDY MEMORIAL COLLEGE OF ENGINEERING AND TECHNOLOGY, (Approved by AICTE, NewDelhi, Affiliated to JNTUK, Kakinada) Vinukonda Road, Petturivaripalem (V), Narasaraopet (M), Guntur (Dt.), Andhra Pradesh - 522601.

² Associate Professor, Department of Civil Engineering, AM REDDY MEMORIAL COLLEGE OF ENGINEERING AND TECHNOLOGY, (Approved by AICTE, NewDelhi, Affiliated to JNTUK, Kakinada) Vinukonda Road, Petturivaripalem (V), Narasaraopet (M), Guntur (Dt.), Andhra Pradesh - 522601.

ABSTRACT:

Warm mix asphalt (WMA) is a recent technology used to reduce the mixing and compaction temperatures without affecting the quality of pavement. Warm mix asphalt is a bituminous mixture where all its constituents are mixed, placed, compacted at medium temperature. A number of WMA processes have been developed in recent days. One of the processes includes the use of synthetic zeolite as an additive. An attempt has been made in the laboratory to develop warm mix asphalt mixes using synthetic zeolite as an additive at a specified mixing and compaction temperature which were obtained after a number of trials. The stone matrix asphalt (SMA) and dense bituminous macadam (DBM) mixes with aggregate gradation as per MORTH specifications were made with varying binder contents (5%, 6% and 7%). The zeolite content was 0.3% by weight of aggregate. Stone dust and cement were used as filler for SMA and DBM samples respectively. VG 30 grade bitumen was used as binder for both the mixes. Marshall procedure has been made for preparation of samples and evaluation of bituminous mixes. The volumetric properties (VA, VMA and VFB), stability, flow value and optimum binder content of the SMA and DBM mix samples have been investigated. The optimum binder content of the DBM and SMA samples was found to be 5.3% and 5.8% respectively.

Keywords: High way crash analysis, infrastructure, residents.

1. INTRODUCTION

There has been increased awareness of environmental problems caused by the asphalt paving industry. Conventional HMA (Hot Mix Asphalt) production and pavements emit large amounts of greenhouse gases such as CO₂, CH₄ and N₂O, [1] as well as aerosols [2]. In order to decrease mixing and compaction temperatures and reduce the emission of harmful compounds, new technologies are used, such as WMAs (Warm Mix Asphalts) which allow temperature reduction of 20-40°C compared to HMA technology. Production of WMA in world in mil. tons per year (data from 2007 to 2013) is shown in Figure 1, while Figure 2 shows that the highest use of WMA is in USA, and in Europe is about 10 times lower [3]. The production temperature of



IMPROVING PEDESTRIAN FACILITY IN CONGESTED URBAN AREA (PEDESTRIAN SIMULATION)

¹ Vaka venkata ramireddy, ² K.Sreekar chand

¹M.Tech Student, Transportation Engineering, AM REDDY MEMORIAL COLLEGE OF ENGINEERING AND TECHNOLOGY, (Approved by AICTE, NewDelhi, Affiliated to JNTUK, Kakinada) Vinukonda Road, Petlurivaripalem (V), Narasaraopet (M), Guntur (Dt.), Andhra Pradesh - 522601.

² Associate Professor, Department of Civil Engineering, AM REDDY MEMORIAL COLLEGE OF ENGINEERING AND TECHNOLOGY, (Approved by AICTE, NewDelhi, Affiliated to JNTUK, Kakinada) Vinukonda Road, Petlurivaripalem (V), Narasaraopet (M), Guntur (Dt.), Andhra Pradesh - 522601.

Abstract:

Pedestrians are extremely vulnerable in crashes with the faster moving and much more massive motor vehicles. Circulation of pedestrian is of vital importance to the modern metropolis, but the paradox here is that though meant for human travel, these roads hardly provide any quality space for those who are without vehicles (well known as pedestrian). Due to the ambiguous position of non-motorized travel in an urban transportation system, the transportation conditions for non-motorized travel are getting worse in cities, which illustrate the urgent need for the improvement for same consequently pedestrian are at greater risk for their safety more especially in the commercial zones of large cities. A change in perspective spotlight will create a sense of awareness that the pedestrian traffic is also vital as the vehicular traffic. Soothing the traffic would moderately cut the driving expediency but the pedestrians will get a much safer and peaceful route to their terminuses. Safety and comfort are the two pans of a balance while considering the pedestrian traffic. Considering these aspects, this study deals a study in improving pedestrian facilities by analyzing the existing skeleton of the selected locations. The adequacy of facility is checked based on IRC latest guidelines and counteractive measures are postulated.

Keywords: pedestrian, vehicular traffic, Safety and comfort

INTRODUCTION

Since the 1960s, skyway systems (also known as skywalk systems) have become

a vital feature in many cities around the world. Ahmedabad is the largest city and former capital of the Indian state of Gujarat. With growing population,

**A STUDY ON SATURATION ON SOIL SUBGRADE STRENGTH USING
NATURAL AND SYNTHETIC ADDITIVES IN ROADS**

¹ Doragarla Ankaiah, ² K.Ramu

¹M.Tech Student, Transportation Engineering, AM REDDY MEMORIAL COLLEGE OF ENGINEERING AND TECHNOLOGY, (Approved by AICTE, NewDelhi, Affiliated to JNTUK, Kakinada) Vinukonda Road, Petlurivaripalem (V), Narasaraopet (M), Guntur (Dt.), Andhra Pradesh - 522601.

² Assistant Professor, Department of Civil Engineering, AM REDDY MEMORIAL COLLEGE OF ENGINEERING AND TECHNOLOGY, (Approved by AICTE, NewDelhi, Affiliated to JNTUK, Kakinada) Vinukonda Road, Petlurivaripalem (V), Narasaraopet (M), Guntur (Dt.), Andhra Pradesh - 522601.

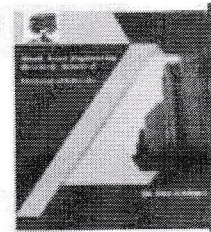
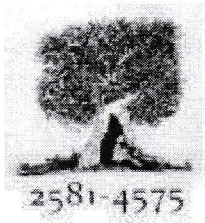
ABSTRACT:

This study aims to have an experimental investigation to check the enhancement in the properties of highly compressible or expansive clay soil reinforced with randomly oriented natural and synthetic fibers such as coir fiber and nylon tyre-cords respectively. The demand for transportation leads to increase in roadways, railways, airways and waterways. Except waterways the other means of transports requires good pavement with high subgrade strength. In place of highly compressible or highly expansive soil the achievement of good subgrade strength is the challenging task. In order to improve the strength of the soil various methods have been adopted. The area chosen for investigation was urban roads of Telangana district. Consistency limits identified were used in classification of soil as per IS standards. The Engineering properties of soil sample collected were investigated by treating it with these fibers as additives in the percentage of 0.1%, 0.2%, 0.3% and 0.4%. The Engineering properties includes maximum dry density, unconfined compressive strength and California bearing ratio were determined in the laboratory for both soil treated with and without fibers. The focus on this research is on the improvement of engineering properties of two natural residual soils and mixed with different proportions of liquid chemical. Series of laboratory test on engineering properties, such as Modified Proctor Test, Consistency limits, moisture-density relationship (compaction) and California Bearing Ratio was undertaken to evaluate the effectiveness and performances of this chemical as soil stabilizing agent.

Keywords: *High way crash analysis, infrastructure, residents.*

1. INTRODUCTION

The Flexible Pavement Design System is known in the Department designates this as the eleventh major version of the system. The Test was extensive in its test features and produced design concepts for both flexible and rigid pavements. The major accomplishment, possibly, of the Road Test was the defining of the serviceability concept or the ability of a pavement to serve traffic for which it was designed. There was one major flaw in the Road Test concept. The demand for transportation leads to increase in roadways, railways, airways and waterways. Except waterways the other means of transports requires good pavement with high subgrade strength. In place of highly compressible or highly expansive soil the achievement of good subgrade strength is the challenging task. In order to improve the strength of the soil various methods have been adopted. The ground improvement by additives is the evolution of recent researches, which



A STUDY ON USE OF RECYCLED AGGREGATES IN PAVEMENTS

¹ Hapavath Vijay Kumar, ² K.Ramu

¹M.Tech Student, Transportation Engineering, AM REDDY MEMORIAL COLLEGE OF ENGINEERING AND TECHNOLOGY, (Approved by AICTE, NewDelhi, Affiliated to JNTUK, Kakinada) Vinukonda Road, Petlurivaripalem (V), Narasaraopet (M), Guntur (Dt.), Andhra Pradesh - 522601.

² Assistant Professor, Department of Civil Engineering, AM REDDY MEMORIAL COLLEGE OF ENGINEERING AND TECHNOLOGY, (Approved by AICTE, NewDelhi, Affiliated to JNTUK, Kakinada) Vinukonda Road, Petlurivaripalem (V), Narasaraopet (M), Guntur (Dt.), Andhra Pradesh - 522601.

ABSTRACT:

The availability of natural aggregates is get decreased and the demolished building materials is get increased in now a days. These demolished materials can be get recycled and can be used as construction materials in both buildings and pavements. The recycled aggregates can used in the pavement construction. For assessing the suitability of using recycled aggregates in pavement

construction three test were conducted. The results obtained from the aggregate crushing test, impact test and specific gravity test are within the desirable limit. From the test result, the recycled aggregates can be used in both base course and the surface course of a pavement.

Keywords: Pavement, Recycled concrete, aggregates, gravity.

1. INTRODUCTION

In developing countries like India nearly 12 million tons of Construction and Demolition wastes are produced per annum. The use of recycled C&D material would greatly reduce the demand for landfill sites and for virgin resource materials by re-using what would be normally regarded as a waste material. In many countries, particularly as populations in urban areas continue to grow, the natural

resources are exploited at rapid rate in view of escalating construction activities. The use of quarry materials is furthermore unsustainable from an environmental perspective manner. The most ambitious recycling construction target is, using waste aggregates, to create a new product with similar properties to the original. This is to make new concrete with old concrete, for this purpose it is needed recycled aggregates with high quality. The demolition of concrete structures, after having completed their useful life or having



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SMART IRRIGATION SYSTEM: INTEGRATING DRIP IRRIGATION WITH ADVANCED MONITORING

TECHNOLOGIES

T. DEEPTHI^{*1}, G. MADHAVI^{*2}, Y. SUVARNA KUMAR^{*3}

^{*1, 2, 3} Assistant Professor, Dept. of Agricultural Engineering.

A.M Reddy Memorial College of Engineering and Technology, Andhra Pradesh

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→ March 2023 (9)
→ May 2023 (15)
→ June 2023 (8)
→ November 2023 (23)
→ October 2023 (10)
→ September 2023 (8)
→ Volume 7 - Year 2022 (35)
→ December 2022- VOLUME 7 ISSUE 12 (11)

Abstract— The paper emphasizes the critical role of water in agricultural irrigation and proposes implementation of an externally hosted cloud computing platform to effectively manage irrigation data across the country. This system utilizes information and communication technologies to enable users to analyze data collected from various sensors. These sensors, including humidity, temperature, moisture, and light sensors, transmit data to a microcontroller, which then communicates this data to an isolated server via serial communication. Upon receiving the sensor data, the isolated server processes it and stores it in a database facility for visualization of sensor data through graphs on both PC and smartphone interfaces. Users can interact with these graphs to make informed decisions, such as toggling drip devices on or off based on the sensor readings. Threshold values are set for each sensor to trigger actions accordingly. Overall, the proposed system aims to revolutionize farming practices by leveraging technology to address water scarcity issues and enhance agricultural productivity. By utilizing advanced sensor technology and cloud computing, the system offers a flexible and efficient solution for managing irrigation processes and improving agricultural systems nationwide.

Keywords—Cloud, Embedded, Android, Remote Monitoring, Wireless Sensor Network

I. INTRODUCTION

Agriculture has been the spine of the Indian economy and it will continue to remain for the long time. Over 60% of the rural households depend on agriculture. One-third of our National income comes from agriculture. The economic improvement started off in the country during the early 1900s, have put the economy on a higher growth

DESIGN AND IMPLEMENTATION OF AREA EFFICIENT LATTICE BASED CRYPTOGRAPHY

¹ Dr. C. Jaja Kumar, ² K. Sanjeev Rao, ³ N. Ramesh Babu

¹ Professor, Department of ECE, AM Reddy Memorial College Of Engineering and Technology, Andhra Pradesh 522601
² Associate Professor, Department of ECE, AM Reddy Memorial College Of Engineering and Technology, Andhra Pradesh 522601
³ Assistant Professor, Department of ECE, AM Reddy Memorial College Of Engineering and Technology, Andhra Pradesh 522601

ABSTRACT: With a recent increase in the advancement of the technology, computer system and its sensitive data are getting exhibited to unauthorized users, with steadily corroding the fundamentals of computer security. This, in fact, demanded fundamental innovations that require several cryptographic paradigms and security protocol. The interest in lattice-based cryptography is increasing due to its quantum resistance and its provable security under some worst-case hardness assumptions. As this is a relatively new topic, the search for efficient hardware architectures for lattice based cryptographic building blocks is still an active area of research. Therefore implementation of hardware efficient lattice based cryptography is proposed in this project. This lattice based cryptography architecture is implemented by using the Number Transform Theory (NTT) for area optimizations to the most critical and insensitive operation applications. The proposed hardware architectures can reduce slice usage, number of utilized memory blocks and total memory accesses by using a simplified address generation, improved memory organization. Compared to prior work, with similar performance the proposed hardware architectures can save number of occupied slices, used memory blocks and can fit into smallest Xilinx Spartan-6 FPGA.

KEYWORDS: Cryptography, lattice-based cryptography, Memory usage, Number Transform Theory (NTT), Xilinx.

I. INTRODUCTION

The impending realization of scalable quantum computers will have a significant impact on today's security infrastructure. With the advent of powerful quantum computers public key cryptographic schemes will become vulnerable to quantum algorithm, undermining the security current communications systems.

Post-quantum (or quantum-resistant) cryptography is an active research area, endeavoring to develop novel and quantum resistant public key cryptography. Amongst the various classes of quantum-resistant cryptography schemes, lattice-based cryptography is emerging as one of the most viable options. Its efficient implementation on software and on commodity hardware has already been shown to compete and even excel the performance of current classical security public-key schemes. This work discusses the next step in terms of their practical deployment, i.e., addressing the physical security of lattice-based cryptographic implementations [1].

These public-key schemes are used in today's security infrastructure to provide public-key encryption and (authenticated) key exchange [2]. Reacting to this urgency, much research is now being conducted into quantum-resilient or post quantum cryptography of the various flavors of quantum-resilient cryptography proposed to date, lattice-based cryptography (LBC) stands out for various reasons. Firstly, these schemes offer security proofs based on NP- hard problems with average-case to worst- case hardness. Secondly, in addition to being quantum-age secure, the LBC implementations are notable for their efficiency, primarily due to their inherent linear algebra based matrix/ vector operations on integers. Thirdly, LBC constructions offer extended functionality for advanced security services such as identity-based encryption (IBE) attribute-based encryption (ABE) and fully-

Principal

A.M REDDY MEMORIAL COLLEGE OF
ENGINEERING & TECHNOLOGY
PETLURIVARI PALEM
Narasaraopet (Mdl), Guntur Dt .

Original Article

Investigating the Neutral Current that Alters the Top Quark's Flavor at an Upcoming Electron-Positron Collider

I. Sita Ramireddy (M. Sc) , K. Rani (M. Sc) , Dr. R. Arunbalaji (Ph. D)

Assistant Professor^{1,2} , Professor³

Abstract:

We offer a research to assess the sensitivity of a future e^-e^+ collider to the anomalous top flavour-changing neutral current (FCNC) stop the gluon. To differentiate signal from background a multivariate analysis is done on top quark pair and background events, where one top quark is supposed to follow the dominant standard model (SM) decay, $t \rightarrow Wb$, while the other top decays via FCNC, $t \rightarrow qg$, where q is a u -oarc-quark. The study of completely hadronic FCNC decay of the tt pair is also provided. The 95% confidence level limits on the top quark anomalous couplings are established for various values of the centre-of-mass energies and integrated luminosities.

Introduction

As it is the heaviest known fundamental particle, the top quark has a unique role to play in the quest for physics beyond the standard model (SM), especially via its unusual properties. detection and quantification of its interactions with other particles. Because of its enormous mass $M_{top} = 173.34 \pm 0.27(stat) \pm 0.71(syst)$ [1], which is near to the scale of electroweak symmetry breaking, and its interactions with other particles like the Higgs boson, the top quark is a great object to test the SM's predictions. Several flavour-changing neutral current (FCNC) processes, such as $t \rightarrow qg$, $t \rightarrow qZ$, or $t \rightarrow q\gamma$, provide venues for the top quark's anomalous interactions. In [2], the anomalous to and Taz in an electron-positron collider of the future are investigated. In this work, we examine top quark FCNC interactions involving the top quark, a light quark q , (u -oarc-quark), and a gluon.

The FCNC transition of $t \rightarrow qg$ in the SM may only occur through loop corrections since it is banned at the tree level by the Glashow-Iliopoulos-Maiani (GIM) mechanism [3]. The loop-level branching ratio for $t \rightarrow qg$ in the SM framework is on the order of 10^{-12} [4, 5]. This modest branching ratio can only be seen and

measured with a large amount of data. Increases in top-quark FCNC processes on a grand scale are possible in a number of non-SM models. New physics would be indicated by the detection of such processes. Higher branching ratios up to 10^{-3} - 10^{-5} are expected in theories beyond SM, such as MSSM, Technicolor, extra dimensions models [6-10], which may be investigated by current high energy experiments. A number of phenomenological analyses [11-14] have been conducted at the Tevatron and the LHC and other experiments using a variety of channels to look for abnormal tag couplings. The ATLAS Collaboration has set the most recent and stringent experimental constraints on the tag branching fractions at the Large Hadron Collider (LHC), with $Br(t \rightarrow u\gamma) 3.1 \times 10^{-5}$ and $Br(t \rightarrow c\gamma) 1.6 \times 10^{-4}$ at a centre-of-mass energy $\sqrt{s} = 8\text{TeV}$, which corresponds to an integrated luminosity of $\mathcal{L}_{int} = 14$.

Future TeV-scale linear colliders, such as the Compact Linear Collider (CLIC) or the International Linear Collider (ILC), are anticipated to round out the LHC probes and, in certain cases, even enhance measurements and impose tighter