Karnataka State Council for Science and Technology

(An autonomous organisation under the Dept. of Science & Technology, Govt. of Karnataka)
Indian Institute of Science Campus, Bengaluru – 560 012
Telephone: 080-23341652, 23348848, 23348849, 23348840
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Dr. U T Vijay
Executive Secretary

Ref: 7.1.01/SPP/37

19th April, 2024

To,
The Principal
Alva's Institute of Engineering and Technology
Shobavana Campus Mijar
Moodbidri - 574 225

Dear Sir/Madam,

Sub : Sanction of Student Project - 47th Series: Year 2023-2024

Project Proposal Reference No. : **47S_BE_1167**

Ref : Project Proposal entitled **LABORATORY INVESTIGATION ON MUNICIPAL INCINERATOR WASTE AS A FILLER MATERIAL IN DENSE BITUMINOUS MIX FOR ROAD CONSTRUCTION**

We are pleased to inform that your student project proposal referred above, has been approved by the Council under "Student Project Programme - 47th Series". The project details are as below:

Student(s)	Mr. SALAM MARIN SINGH	**Department**	CIVIL ENGINEERING
	Mr. MANGAL THOIBA IRENGBAM		
	Ms. PRAGATI T. NAIK		
	Mr. SHIVAKUMAR K. N.	**Sanctioned Amount (in Rs.)**	5,500.00
Guide(s)	Prof. SHANKARGIRI K. S.		

Instructions:

a) The project should be performed based on the objectives of the proposal submitted.

b) Any changes in the project title,objectives or students team is liable for rejection of the project and your institution shall return the sanctioned funds to KSCST.

c) Please quote your project reference number printed above in all your future correspondences.

d) After completing the project, 2 to 3 page write-up (synopsis) needs to be uploaded on to the following Google Forms link https://forms.gle/6s8hq5XbScsBMv3G9. The synopsis should include following:

1) Project Reference Number

2) Title of the project

3) Name of the College & Department

4) Name of the students & Guide(s)

5) Keywords

6) Introduction / background (with specific reference to the project, work done earlier, etc) - about 20 lines

7) Objectives (about 10 lines)

PRINCIPAL
Alva's Institute of Engg. & Technology,
Mijar. MOODBIDRI - 574 225, D.K

8) Methodology (about 20 lines on materials, methods, details of work carried out, including drawings, diagrams etc)

9) Results and Conclusions (about 20 lines with specific reference to work carried out)

10) Scope for future work (about 20 lines).

e) In case of incompeted projects, the sanctioned amount shall be returned to KSCST.

f) The sanctioned amount will be transferred by NEFT to the bank account provided by the College/Institute.

g) The sponsored projects evaluation will be held **third week of May 2024** onwards through Online Mode and the details of the same will be intimated shortly by email / Website

h) After completion of the project, soft copy of the project report duly signed by the Principal, the HoD, Guide(s) and studetn(s) shall be uploaded in the following Google Forms Link https://forms.gle/Mi446v1U5fdFcMD99. The report should be prepared in the format prescribed by the university.

i) The **Utilization Certificate and Statement of Expenditure duly signed by competent authority** of consolidated sanctioned projects from your institution need to be submitted **20 August 2024** without fail.

Please visit our website for further announcements / information and for any clarifications please email to spp@kscst.org.in

Thanking you and with best regards,

Yours sincerely,

(U T Vijay)

Copy to:

1) The HoD
CIVIL ENGINEERING
ALVA'S INSTITUTE OF ENGINEERING AND TECHNOLOGY, MOODBIDRI

2) Prof. SHANKARGIRI K. S.
CIVIL ENGINEERING
ALVA'S INSTITUTE OF ENGINEERING AND TECHNOLOGY, MOODBIDRI

3) THE ACCOUNTS OFFICER
KSCST, BENGALURU

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"Jnana Sangama" Belagavi – 590 010

PROJECT REPORT ON

"LABORATORY INVESTIGATION ON MUNICIPAL INCINERATOR WASTE AS A FILLER MATERIAL IN DENSE BITUMINOUS MIX FOR ROAD CONSTRUCTION"

Submitted in partial fulfillment of the requirements for the award of degree of

BACHELOR OF ENGINEERING
IN
CIVIL ENGINEERING

Submitted By

MANGAL THOIBA IRENGBAM	4AL20CV008
PRAGATI T NAIK	4AL20CV015
SALAM MARIN SINGH	4AL20CV020
SHIVAKUMAR K N	4AL20CV023

Under the Guidance of
Prof. Shankargiri K S
Assistant Professor
Department of Civil Engineering

ALVA'S
Education Foundation

DEPARTMENT OF CIVIL ENGINEERING
ALVA'S INSTITUTE OF ENGINEERING & TECHNOLOGY
MOODBIDRI – 574 225.

2023-2024

ALVA'S INSTITUTE OF ENGINEERING & TECHNOLOGY
MOODBIDRI – 574 225
(Affiliated to VTU, BELAGAVI)
DEPARTMENT OF CIVIL ENGINEERING

CERTIFICATE

Certified that the project work entitled

"LABORATORY INVESTIGATION ON MUNICIPAL INCINERATOR WASTE AS A FILLER MATERIAL IN DENSE BITUMINOUS MIX FOR ROAD CONSTRUCTION"

is Bonafide work carried out by

MANGAL THOIBA IRENGBAM	**4AL20CV008**
PRAGATI T NAIK	**4AL20CV015**
SALAM MARIN SINGH	**4AL20CV020**
SHIVAKUMAR K N	**4AL20CV023**

In partial fulfillment for the award of BACHELOR OF ENGINEERING in **CIVIL ENGINEERING** of the **VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI** during the year 2023–24. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the report deposited in the departmental library. The project report has been approved as it satisfies the academic requirements in respect of Project work prescribed for the Bachelor of Engineering Degree.

25/5/24

Signature of the Guide
Mr. Shankargiri K S
Assistant Professor

Signature of the H.O.D
Prof.Durgaprasad Baliga

Signature of the Principal
Dr. Peter Fernandes

PRINCIPAL
Alva's Institute of Engg. & Technology,
Mijar, MOODBIDRI - 574 225, D.K

EXTERNAL VIVA

Name of the Examiners	Signature with date
1. Ms. Anusha B Rao	29/5/24
2. Dr Ganesh Mogaveera	29/5/2024

ABSTRACT

Municipal Incinerator Waste poses a significant challenge for waste management due to its non- biodegradable nature and potential environmental hazards. Recycling such waste into beneficial applications, such as road construction, can mitigate these challenges while promoting sustainable practices. This study investigates the feasibility of using municipal incinerator waste as a filler material in bituminous mix for road construction.

In the present study, the laboratory experiments were conducted to evaluate the engineering properties of aggregates, bitumen, incinerator waste and bituminous mixtures containing varying proportions of municipal incinerator waste as a filler material. The Rothfutch's mix design method is followed for obtaining job mix formula of aggregate and Marshall mix design method was employed to determine the optimum bitumen content for bituminous mix having gradation requirement of DBM grade-1 as per MoRTH specification and aggregate blend for the mixtures. The Marshall stability, flow values, and density of the mixtures were then determined to assess their performance characteristics. The results are compared for the Marshall moulds prepared with varying percentage of filler material in bituminous mix.

By considering Marshall Parameters of moulds prepared with latex modified binder, by adding 2% of municipal incinerator waste we got higher stability value 2529 kg. As the laboratory investigation carried up to 8% (2, 4, 6 & 8%), the Marshall properties satisfying the requirements. The municipal incinerator waste upto 8% in bitumen mixes shown all required Marshall properties. The use of municipal incinerator waste also can reduce the amount of filler material required for the bituminous mix.