

# **BEHAVIOUR OF CONCRETE BY PARTIAL REPLACEMENT OF COARSE AGGREGATE WITH RECYCLED PLASTIC GRANULES**

**A DISSERTATION**

**SUBMITTED IN PARTIAL FULFILLMENT OF THE  
REQUIREMENTS FOR THE DEGREE OF**

**Master of Technology  
in  
Civil Engineering**

**Submitted by  
Nesar Ahmad  
(20PGCEC02)**

**Under the Guidance of  
Dr. Deepa Srivastava**



**Department of Civil engineering  
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Faridabad**

**June - 2022**

## **CERTIFICATE**

This is to certify that dissertation entitled, "BEHAVIOUR OF CONCRETE BY PARTIAL REPLACEMENT OF COARSE AGGREGATE WITH RECYCLED PLASTIC GRANULES", submitted by **Nesar Ahmad** to the Civil engineering Department, Lingaya's Vidyapeeth, Faridabad, in partial fulfilment of the requirement for the award of the degree of Master of Technology, is a record of bonafide work carried out by him under our supervision and guidance. The work has not been submitted in parts or full to any other University or Institute for the award of any degree or diploma or for any other purpose.

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## **ACKNOWLEDGEMENT**

I would like to express my special thanks of gratitude to my guide, Dr. Deepa srivastava, who gave me an opportunity to do this dissertation and also provided support & his valuable inputs in completing this dissertation.

I would also like to extend my gratitude to other faculty members for providing me all the necessary information & resources that were required during my M. Tech. degree.

  
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# **REUSE OF CONCRETE WASTE & DEMOLITION WASTE AS NEW AGGREGATE**

DISSERTATION SUBMITTED  
IN PARTIAL FULFILLMENT OF THE  
REQUIREMENTS FOR THE DEGREE OF

**Master of Technology**

in

**Civil Engineering**

By

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**20PGCEC03**

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**July, 2022**

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This is to certify that dissertation entitled, “ Reuse of old concrete as new aggregate “, submitted by MD AADIL to the Civil Engineering Department, Lingaya’s Vidyapeeth, Faridabad, in partial fulfilment of the requirement for the award of the degree of Master of Technology, is a record of bonafide work carried out by him under our supervision and guidance. The work has not been submitted in parts or full to any other University or Institute for the award of any degree or diploma or for any other purpose.

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## **ACKNOWLEDGEMENT**

**I would like to express my special thanks of gratitude to my guide, Mr. Deepak Kaushik, who gave me an opportunity to do this dissertation and also provided support & his valuable inputs in completing this dissertation. I would also like to extend my gratitude to other faculty members for providing me all the necessary information & resources that were required during my M. Tech. degree.**

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## **ABSTRACT**

Today's modern era is demanding more and more infrastructure development and with the increasing demand of infrastructure, the demand and supply chain of the construction material are getting affected. With increasing pace of development, a great concern is required towards environment as well as natural resources. In this paper, behavior of concrete utilizing recycled aggregate is critically reviewed. Properties of recycled aggregate are discussed at first, followed by the properties of concrete utilizing recycled aggregate. It has been reported that recycled aggregate was found useful if the replacement level is about 30%. This type of concrete has been used in many applications. Recycled aggregate can be seen as future material which will be eco -friendly and will decrease in project cost. Keywords: Recycled aggregate, concrete utilizing recycled aggregate, construction and demolition waste.

# **SELF CURING CONSTRUCTION MATERIALS**

A Dissertation  
Submitted in partial fulfillment of the  
Requirements for the Degree of

**Master of Technology**

in

**Civil Engineering**

By

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**JULY 2022**



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This is to certify that dissertation entitled, "**SELF CURING CONSTRUCTION MATERIALS.....**", submitted by **MD ANISUL HAQUE** to the Mechanical engineering Department, Lingaya's Vidyapeeth, Faridabad, in partial fulfilment of the requirement for the award of the degree of Master of Technology, is a record of bonafide work carried out by him under our supervision and guidance. The work has not been submitted in parts or full to any other University or Institute for the award of any degree or diploma or for any other purpose.

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## ACKNOWLEDGEMENT

I would like to express my special thanks of gratitude to my guide, Mr. Parvesh Kumar who gave me an opportunity to do this dissertation and also provided support & his valuable inputs in completing this dissertation. I would also like to extend my gratitude to other faculty members for providing me all the necessary information & resources that were required during my M. Tech. degree.



**Md Anisul Haque**  
**20PGCE 04**

## ABSTRACT

Mechanical properties of concrete depend on the curing condition of concrete.

Now day Also so many self Curing materials available for construction work.

The ACI-308(2010) through ACI-308(2014) Code states that

because of the availability of additional internal water that is not part of the mixing Water”, curing concrete means that water is not lost from the surface i.e., curing is taken to happen from the outside to inside. In contrast, internal curing is allowing for curing ‘from the inside to outside. Internal curing’ is the strength and durability of concrete. Shrinkage reducing agents and lightweight aggregates such as Leca and Polyethylene-glycol, Silica fume and stone chips are used respectively to achieve effective curing results. It is observed that there is an increase in compressive strength by using polyethylene glycol (PEG) and light weight fine aggregate (LWA).

**Assessment of quality of Urban Environment:  
A case study of Varanasi city, Uttar Pradesh, India**

DISSERTATION SUBMITTED

IN PARTIAL FULFILLMENT OF THE *REQUIREMENTS* FOR THE DEGREE OF

**Master of Technology**

In

**Civil Engineering**

By

**Mrigank Shekhar**

**20PGCEC05**

Under the Guidance of

**Dr Deepa Srivastava**

**Asst. Professor**



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VIDYAPEETH**

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u/s 3 of UGC Act 1956

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**DEPARTMENT OF CIVIL ENGINEERING**

**LINGAYA'S VIDYAPEETH**

**Faridabad, Haryana**

July 2022

Assessment of quality of Urban Environment:  
A case study of Varanasi city, Uttar Pradesh, India

## CERTIFICATE

This is to certify that dissertation entitled, "**Assessment of quality of Urban Environment: A case study of Varanasi city, Uttar Pradesh, India**", submitted by **Mrigank Shekhar** to the Civil Engineering Department, Lingaya's Vidyapeeth, Faridabad, in partial fulfilment of the requirement for the award of the degree of Master of Technology, is a record of Bonafede work carried out by him under our supervision and guidance. The work has not been submitted in parts or full to any other University or Institute for the award of any degree or diploma or for any other purpose.

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Assessment of quality of Urban Environment:  
A case study of Varanasi city, Uttar Pradesh, India

## ACKNOWLEDGEMENT

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I would also like to extend my gratitude to other faculty members for providing me all the necessary information & resources that were required during my M. Tech. degree.

  
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**USE OF GLASS FIBER FOR STRENGTH  
ENHANCEMENT OF CONCRETE**

DISSERTATION SUBMITTED  
IN PARTIAL FULFILLMENT OF THE  
REQUIREMENTS FOR THE DEGREE OF

**Master of Technology**

in

**Civil Engineering**

By

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Under the Guidance of

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This is to certify that dissertation entitled, “ Use of Glass Fiber for Strength Enhancement of Concrete “, submitted by Manish Gupta to the Civil Engineering Department, Lingaya’s Vidyapeeth, Faridabad, in partial fulfilment of the requirement for the award of the degree of Master of Technology, is a record of bonafide work carried out by him under our supervision and guidance. The work has not been submitted in parts or full to any other University or Institute for the award of any degree or diploma or for any other purpose.

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## **ACKNOWLEDGEMENT**

would like to express my special thanks of gratitude to my guide, Mr. Deepak Kaushik, who gave me an opportunity to do this dissertation and also provided support & his valuable inputs in completing this dissertation.

I would also like to extend my gratitude to other faculty members for providing me all the necessary information & resources that were required during my M. Tech. degree.



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# **EVALUATION OF MARSHALL STABILITY PROPERTIES AND FATIGUE BEHAVIOUR OF BITUMINOUS MIXES USING WASTE PLASTIC**

A DISSERTATION

SUBMITTED IN PARTIAL FULFILLMENT OF THE  
REQUIREMENTS FOR THE DEGREE OF

Master of Technology  
in  
Civil Engineering

By

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July - 2022

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This is to certify that dissertation entitled, “**evaluation of marshall stability properties and fatigue behaviour of bituminous mixes using waste plastic**”, submitted by **Mihir Kumar Jha** to the Civil engineering Department, Lingaya’s Vidyapeeth, Faridabad, in partial fulfilment of the requirement for the award of the degree of Master of Technology, is a record of bonafide work carried out by him under our supervision and guidance. The work has not been submitted in parts or full to any other University or Institute for the award of any degree or diploma or for any other purpose.

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## ACKNOWLEDGEMENT

I would like to express my special thanks of gratitude to my guide, Mr. Parvesh Kumar, who gave me an opportunity to do this dissertation and also provided support & his valuable inputs in completing this dissertation. I would also like to extend my gratitude to other faculty members for providing me all the necessary information & resources that were required during my M. Tech. degree.



**Mihir Kr. Jha**  
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## **ABSTRACT**

Bitumen is a very complex material and durability of bitumen pavement depends upon selection of appropriate grade of bitumen to suit the climate conditions and traffic loading. Increase in traffic density, coupled with higher wheel loads and temperature variation lead to premature failure of bituminous course. Cracking or fatigue of the asphalt layer from repeated tensile strains due to traffic loading, the maximum is found at bottom of the bituminous layer.

The present investigation was carried out to propose the use of waste processed plastic for the modification of bituminous concrete mix in order to cater the need of varying climatic condition prevailing in India and heavy axle loads on the pavements as well as to minimize plastic waste. Waste processed plastic were mixed to bituminous concrete by wet and dry process to get modified mix. Marshall Method of mix design was adopted to find out the optimum bitumen content. Marshall specimen were prepared for bitumen content of 4, 4.25, 4.50, 4.75, 5.0, 5.25, 5.5 percent by weight of mix with 6, 7 and 8 percent of waste plastic by weight of bitumen. Bulk density, Marshall Stability, Flow value, Marshall Quotient, Air voids, Voids in Mineral Aggregates (VMA), Voids Filled with Bitumen (VFB) were determined and compared with bituminous concrete mixes. The optimum amount of waste plastic to be added as a modifier of bituminous concrete was found to be 7.10% by weight of optimum bitumen content of the bituminous concrete mix for samples casted with VG 30 in wet process which has approximately 41% and 6.25% higher stability value and flow value respectively compared to the dry bituminous concrete mix. The flow value is also within limit for this modified mix and flow observed was in the range of 2 to 4 mm.

*Keywords:* Low-density Polyethylene (LDPE), Dry process, Wet process, Plastic modified bitumen, Marshall Stability Test

# Structural Stability Analysis of Existing Structures

A Dissertation

Submitted in partial fulfillment of the

Requirements for the Degree of

Master of Technology in Civil Engineering

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(20PGCES-01)

Under The Guidance of  
Mr. Mohd. Bilal Khan

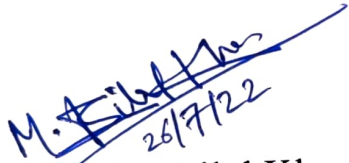


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This is to certify that dissertation entitled, “Structural Stability Analysis of Existing Structures”, submitted by Ravinder Kumar to the Civil Engineering Department, Lingaya’s Vidyapeeth, Faridabad, in partial fulfilment of the requirement for the award of the degree of Master of Technology, is a record of bonafide work carried out by him under our supervision and guidance. The work has not been submitted in parts or full to any other University or Institute for the award of any degree or diploma or for any other purpose.

  
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## ACKNOWLEDGEMENT

I would like to express my special thanks of gratitude to my guide, Mr. Mohd. Bilal Khan, who gave me an opportunity to do this dissertation and also provided support & his valuable inputs in completing this dissertation.

I would also like to extend my gratitude to other faculty members for providing me all the necessary information & resources that were required during my M. Tech. degree.



Ravinder Kumar  
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# **Recycling Of Bituminous Material (REJUPAVE)**

A DISSERTATION

SUBMITTED IN PARTIAL FULFILLMENT OF THE  
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**Master of Technology in Civil Engineering**

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June – 2022

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This is to certify that dissertation entitled, “**Bituminous Pavement Recycling using REJUPAVE Technolog.**”, submitted by Prashant Mishra to the Civil engineering Department, Lingaya’s Vidyapeeth, Faridabad, in partial fulfilment of the requirement for the award of the degree of Master of Technology, is a record of bonafide work carried out by him under our supervision and guidance. The work has not been submitted in parts or full to any other University or Institute for the award of any degree or diploma or for any other purpose.

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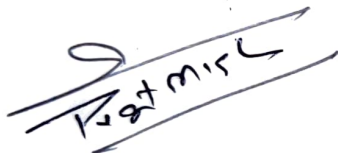
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# ACKNOWLEDGEMENT

I would like to express my special thanks of gratitude to my guide, RAMEEZUT TAUHID, who gave me an opportunity to do this dissertation and also provided support & his valuable inputs in completing this dissertation.

I would also like to extend my gratitude to other faculty members for providing me all the necessary information & resources that were required during my M. Tech.degree.



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# EXPERIMENTAL STUDY ON SELF HEALING CONCRETE

A Dissertation

Submitted in partial fulfillment of the  
Requirements for the Degree of

Master of Technology

In

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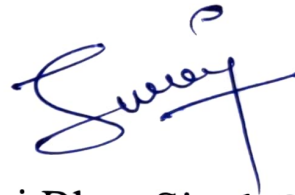
  
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## ACKNOWLEDGEMENT

I would like to express my special thanks of gratitude to my guide, Mr. Rameezut Tauheed (Professor, Civil Dept.), who gave me an opportunity to do this dissertation and provided support & his valuable inputs in completing this dissertation.

I would also like to extend my gratitude to other faculty members for providing me all the necessary information & resources that were required during my M. Tech. degree.



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# **ASSESSMENT OF STRUCTURAL STABILITY OF BUILDINGS**

*A Dissertation  
Submitted in partial fulfillment of the  
Requirements for the Degree of*

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## ACKNOWLEDGEMENT

I would like to express my special thanks of gratitude to my guide, **MR. RAMEEZUT TAUHEED (Asst. Professor Civil Engg. Dept.)**, who gave me an opportunity to do this dissertation and also provided support & his valuable inputs in completing this dissertation,

I would also like to extend my gratitude to other faculty members for providing me all the necessary information & resources that were required during my M. Tech. Degree.



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## ABSTRACT

After the incident wherein one substation building was collapsed, Management had decided to review the structural safety of 276 nos BRPL premises those were constructed before year 2000. A Govt. approved consultant was hired by BRPL for structural safety audit selected through open bidding process and conducted the structural audit of the selected office buildings.

As per consultant's report, the structure of these buildings do not confirm to various provision of present earthquake resistant design codes like IS 1893-2016; IS 4326-2013; IS13920-2016, while these locations lie in earthquake zone IV. However structure has been constructed with seismic provision prevailing at the time of constructions. The consultant has declared 23 Nos buildings unsafe out of which 29 Nos buildings (EHV Grid) can attain or increase the overall life of the building by Retrofitting works as per their recommendation.

The unsafe declared buildings have been categorized according to the condition of RCC beams, ceiling and columns, those which have loosen their strength with the passage of time and visible rusted reinforcements are making it dangerous which may fail during earthquake and cause harm to human life as well as other expensive assets of the BRPL. The condition of brick walls and roof treatment is also considered for the categorization of unsafe buildings.

Grid buildings in BRPL whose current condition was found critical & serious and declared unsafe for long term use in respect to its safety and stability during earthquake are considered for retrofitting because urgent measures should be taken to make them safe for staff as well as for consumers.

This dissertation project is presented for structural assessment of three nos of sub-station buildings namely

1. 33KV Tughlakabad Grid located at Air Force MES Colony, Tughlakabad, New Delhi-110019
2. 33 KV Masjid Moth Grid located near Chirag Delhi, DTC Bus Stand, New Delhi-110017 and
3. 33 KV Bhikaji Cama Place Grid located Near August Kranti Bhawan, Bhikaji Cama Place Complex, New Delhi-110066.

# **BIM-Based Decision Support System for Material Selection Based on Supplier Rating**

A DISSERTATION  
SUBMITTED IN PARTIAL FULFILMENT OF THE  
REQUIREMENTS FOR THE DEGREE OF

**Master of Technology in Civil Engineering  
(Construction Technology and Management)**

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BIM-Based Decision Support System for Material Selection Based on Supplier Rating



# **RISK MANAGEMENT IN METRO RAIL CONSTRUCTION**

A DISSERTATION

SUBMITTED IN PARTIAL FULFILMENT OF THE  
REQUIREMENTS FOR THE DEGREE OF

**Master of Technology**

In

**Civil Engineering (Construction Technology & Management)**

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Under the Guidance of  
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This is to certify that dissertation entitled, "Risk Management in Metro Rail Construction", submitted by Sunil Kumar to the Civil Engineering Department, Lingaya's Vidyapeeth, Faridabad, in partial fulfilment of the requirement for the award of the degree of Master of Technology, is a record of Bonafede work carried out by him under our supervision and guidance. The work has not been submitted in parts or full to any other University or Institute for the award of any degree or diploma or for any other purpose.



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## **ACKNOWLEDGEMENT**

I would like to express my special thanks of gratitude to my guide, **MOHD ZEESHAN KHAN (Assistant Professor Department of Civil Engineering)**, who gave me an opportunity to do this dissertation and also provided support & his valuable inputs in completing this dissertation.

I would also like to extend my gratitude to other faculty members for providing me all the necessary information & resources that were required during my M. Tech.

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# EFFECT OF FLY ASH ON STRENGTH OF PAVEMENT QUALITY CONCRETE

A DISSERTATION

SUBMITTED IN PARTIAL FULFILLMENT OF THE  
REQUIREMENTS FOR THE DEGREE OF

Master of Technology  
In  
Civil Engineering  
(Construction Technology & Management)

By  
**SUMIT KUMAR**  
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## CERTIFICATE

This is to certify that dissertation entitled, “**Effect of flyash on strength of pavement quality concrete**”, submitted by Sumit Kumar to the Civil engineering Department, Lingaya’s Vidyapeeth, Faridabad, in partial fulfilment of the requirement for the award of the degree of Master of Technology, is a record of bonafide work carried out by him under our supervision and guidance. The work has not been submitted in parts or full to any other University or Institute for the award of any degree or diploma or for any other purpose.



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## **ACKNOWLEDGEMENT**

I would like to express my special thanks of gratitude to my guide, **Mr. Rameezut Tauheed (Asst. Professor, Civil Dept.)**, who gave me an opportunity to do this dissertation and provided support & his valuable inputs in completing this dissertation.

I would also like to extend my gratitude to other faculty members for providing me all the necessary information and resources that were required during my M. Tech. degree.



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# **Performance and Analysis of Coir Fiber as a Soil Reinforcement**

A Dissertation  
Submitted in partial fulfillment of the  
Requirements for the Degree of

Master of Technology in Civil Engineering

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This is to certify that dissertation entitled, "Performance and Analysis of Coir Fibre as a Soil Reinforcement" submitted by Virender Kumar to the civil engineering Department, Lingaya's Vidyapeeth, Faridabad, in partial fulfilment of the requirement for the award of the degree of Master of Technology, is a record of bonafide work carried out by him under our supervision and guidance. The work has not been submitted in parts or full to any other University or Institute for the award of any degree or diploma or for any other purpose.

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## ACKNOWLEDGEMENT

I would like to express my special thanks of gratitude to my guide, **Rameezut Tauheed (Civil Dept.)**, who gave me an opportunity to do this dissertation and also provided support & his valuable inputs in completing this dissertation.

I would also like to extend my gratitude to other faculty members for providing me all the necessary information & resources that were required during my M. Tech. degree.

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