DETERMINATION OF COMPRESSIVE STRENGTH OF CONCRETE USING IRON GRAIN AND STONE PARTICLE AS A PARTIAL REPLACEMENT OF SAND

A Project Report Submitted to the Department of Civil Engineering,

Sonargaon University in Partial Fulfillment of the Requirements for the Degree of Bachelor of Science in Civil Engineering

Supervised by

Md. Harun Ar Rashid
Lecturer
Department of Civil Engineering

Submitted by

Sukomal Roy	**BCE1602008153**
S. M. Mohsin Alam Reza	**BCE1602008150**
Md. Shahnur Rahman	**BCE1602008168**
Md. Hadidul Islam	**BCE1602008169**
Mir Yeam Leekush	**BCE1602008128**

Section 8B

Department of Civil Engineering
Sonargaon University (SU)
147/I Green Road, Dhaka-1215
Bangladesh.



DEDICATION

Dedicated

To our

Beloved

Parents

A Thesis by Batch-8B

Sonargaon University (SU)
Department of Civil Engineering

LETTER OF TRANSMITTAL

August 02, 2019

To

Md. Harun Ar Rashid

Lecturer
Department of Civil Engineering
Sonargaon University (SU)
147/I Green Road, Dhaka-1215, Bangladesh.

Subject: **Submission of Project Report.**

Dear Sir,
This is our great pleasure that we are submitting here with the project report of **Determination of Compressive Strength of Concrete using Iron Grain and Stone Particle as a Partial Replacement of Sand**. It is an important topic. The Project Report has been done according to the requirement and guidelines of the Sonargaon University (SU).

We hope that this report will certainly help you in evaluating our project report on **Determination of Compressive Strength of Concrete using Iron Grain and Stone Particle as a Partial Replacement of Sand**. We would be very glad to provide any assistance in interpreting any part of the paper, whenever necessary.

Thanking You

Sincerely your

Sukomal Roy
ID-BCE 1602008153
Group Leader

DECLARATION

This is to declare that the material presented in the report has been carried out by us and has not previously been submitted to any University/ College/ Organization for any academic qualification.

We hereby ensure that the work has been presented dose no breach existing copyright.

We undertake to indemnify the university against any loss or damage arising from breach of the foregoing obligation.

Thank You

Sincerely Your

Group Batch

Sukomal Roy
ID-BCE1602008153

S. M. Mohsin Alam Reza
ID-BCE1602008150

Md. Shahnur Rahman
ID-BCE1602008168

Md. Hadidul Islam
ID-BCE1602008169

Mir Yeam Leekush
ID-BCE1602008128



Sonargaon University (SU)
Department of Civil Engineering

RECOMMENDATION LETTER FROM THESIS SUPERVISOR

The thesis entitled **Determination of Compressive Strength of Concrete using Iron Grain and Stone Particle as a Partial Replacement of Sand**. Performed and submitted by Sukomal Roy, S. M. Mohsin Alam Reza, Md. Shahnur Rahman, Md. Hadidul Islam, and Mir Yeam Leekush for partial fulfillment of the requirement of the degree of B.Sc. in Civil Engineering from the Sonargaon University (SU).

The project work has been carried out my guidance and is a record of the successful work.

Supervisor

Md. Harun Ar Rashid
Lecturer
Department of Civil Engineering
Sonargaon University (SU)
147/I Green Road, Dhaka-1215, Bangladesh

Sonargaon University (SU)
Department of Civil Engineering

CERTIFICATE OF ACCEPTANCE OF THE THESIS

This is to certify that the project paper on **Determination of Compressive Strength of Concrete using Iron Grain and Stone Particle as a Partial Replacement of Sand** is the confide record of project work done by Sukomal Roy, S. M. Mohsin Alam Reza, Md. Shahnur Rahman, Md. Hadidul Islam and Mir Yeam Leekush for partial fulfillment of the requirement of the degree of B.Sc. in Civil Engineering from the Sonargaon University (SU).

The project work has been carried out under my guidance and is a record of the successful work.

Supervisor

Md. Harun Ar Rashid
Lecturer
Department of Civil Engineering
Sonargaon University (SU)
147/I Green Road, Dhaka-1215, Bangladesh

ACKNOWLEDGEMENT

All praises and profound gratitude to the almighty Allah who is the most beneficent and the most merciful for allowing great opportunity and ability to bring this effort to fruition safety and peacefully.

First of all, we would like to express our sincere gratitude to our supervisor **Md. Harun Ar Rashid** for his throughout patience, guidance, valuable advices and help to complete the research work.

We would like to place on record our deep sense of gratitude to our guides for their cooperation and unfailing courtesy to us at every stage.

We sincerely would like to thank all instructions and staffs of the Civil Engineering Department of Sonargaon University (SU), Dhaka, which contributed in various ways to the completion of this thesis.

Finally we would like to express our deepest gratitude to our entire group member whose support and manual labor contributed in various ways for the completion of this thesis work.

Authors

Sonargaon University (SU)

ABSTRACT

Cement, sand and aggregate are basic needs for any construction industry. Sand is a prime material used for preparation of mortar and concrete and which plays a major role in mix design. An experimental study was carried out to investigate the strength properties of concrete produced with iron & stone filings as partial replacement for sand.. The non-availability or shortage of river sand will affect the construction industry; hence there is a need to find the new alternative material to replace the river sand, such that excess river erosion and harm to environmental is prevented. Many researchers are finding different materials to replace sand and more of the major materials are Iron grain and Stone particle etc. Using different proportion of this stone particle and iron grain partial replacement with sand the required concrete mix can be obtained. This paper presents a review of the different alternatives to natural sand in preparation of mortar and concrete. It does emphasize on the physical and mechanical properties and strength aspect of concrete. On the basis of the experimental investigation it was found that the compressive strength of concrete cylinders with 5%, 10%, 15%, 20%, 25% of Iron grain were maximum compressive strength but Stone particle the compressive strength was not that remarkable though. This experimental work suggests that iron grain with 25% of total fine aggregate volume is more effective as an alternative to sand in concrete.

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LIST OF SYMBOLS

Symbol	Description
CS	Compressive Strength
SP	Stone Particle
IG	Iron Grain
WBA	Washed Bottom Ash
SFB	Spent Fire Brick
SGP	Sheet Glass Powder
CCBP	Coal Combustion By Product
ISSA	Incinerate Sewage Sludge Ash
CGF	Crushed Granite Fine
SG	Specific Gravity
WAC	Water Absorption Capacity
BSC	Bulk Specific Gravity
F.M	Fineness Modulus
UTM	Universal Testing Machine
C&D	Construction and Demolition
Mpa	Mega Pascal
Psi	Pound per square inch
W/C	Water Cement Ratio
SSD	Saturated Surface Dry