Re-Usage Of Waste Foundry Sand In Medium Strength Concrete

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FALL-2019

LETTER OF TRANSIMITTAL

To

Md. Lutfor Rahman
Assistant Professor, Head,
Supervisor, Project & Thesis
Head of Civil Engineering Department
Sonargaon University

Subject: Submission of Thesis Report

Dear Sir, With profound reference towards the dignity of yours, we are submitting thesis paper on " Re-usage of waste foundry sand in high-strength concrete " Thank you Sir for assigning us with this report.

We are grateful and thankful to you for the kind hand of help, support and guidance that you extended to me while preparing this report and always during the course.

I hope and pray that you would be kind enough to redirect us if there is any mistake anywhere in way Sincerely yours,

Section: 8A+8E

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A THESIS BY

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In partial fulfillment of the requirement for the degree of Bachelor of Science (B.Sc.) in Civil Engineering

FALL-2019

DEDICATED TO OUR

PARENTS &TEACHERS

SONARGAON UNIVERSITY

DEPARTMENT OF CIVIL ENGINEERING

CERTIFICATE

The thesis titled "Re-usage of waste foundry sand in high-strength concrete", Submitted **by Md Al-Imran, Mahmudur Rahman Zihad, Md. Tanvir Hossain, Ashrafuzzaman Arif & Abdyr Gaffar**, Session: **Fall-2019** has been accepted as satisfactory in partial fulfillment of the requirement for the degree of Bachelor of Science (B.Sc.) in Civil Engineering.

……..

Md. Lutfor Rahman
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Supervisor, Project & Thesis
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DECLARATION

We do hereby solemnly declare that the work presented in this report has been carried out by us under the supervision of **Md. Lutfor Rahman**(Assistant Professor, Head of Civil Engineering Department); we have tried our best to make the report with accurate with information and relevant data.We hereby ensure that, the work that has been presented dose not breach any existing copyright. We further undertake to indemnify the university against any loss or damage arising from breach of the forgoing obligation.

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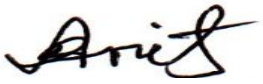

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ACKNOWLEDGEMENT

At first we would like to express eternal gratitude to the Almighty for the successful completion of this study.

We would like to express our earnest gratitude to our supervisor,**Md. LutforRahman** (Assistant Professor, Head of Civil Engineering Department) for giving us an opportunity to work on such an important topic. There continuous guidance, essential suggestions and invaluable judgment are greatly acknowledged. Their keen interest in this topic and wholehearted support on our effort was a source of stimulation to carry out the study. We consider ourselves fortunate to work under his supervision.

We are extremely indebted to Assistant Professor **Md. Lutfor Rahman**, Head of Civil Engineering Department, Sonargaon University (SU) for providing necessary infrastructural and resources to accomplish our research work.

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The authors are grateful to their parents and family for their deep support and continuous encouragement and patience that helped them to be what they are today.

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ABSTRACT

In this study, the potential re-use of waste foundry sand in high-strength concrete production was investigated. Because Concrete is currently one of the most widely used construction material.

Mainly our research was for take a decision to use this concrete as a medium-strength concrete with decrease the materials costing by use a waste (valueless) materials which is Foundry Sand. Foundry Sand produce from Re-Rolling mill. Billet heat by 1200-1500 degree Celsius Temperature to produce MS Bar, Angle etc. Then the fracture of the Billet (like as Rust) fall down and finally it's the Foundry Sand.

So we used Foundry sand (which is a waste materials & has no value) as a alternative of Fine Aggregate. For use it we can decrease the concrete costing.

The natural fine-sand is replaced with waste foundry sand (50%, 60%, 70%and 100%). The findings result from a series of test program has shown increasing in compressive strength which is directly related to waste foundry inclusion in concrete. Nevertheless the concrete with 10% waste foundry sand exhibits almost similar results to that of the control one. The workability of the fresh concrete decreases with the increase of the waste foundry sand ratio.

The obtained results satisfied the acceptable limits set by the American Concrete Institute (ACI), which is for normal concrete is 20 Mpa to 25 Mpa and we got the strength by use of Foundry Sand is 25.08 Mpa. We used the different percentage of Foundry Sand replaced by Fine Aggregate that's 50%, 60%, 70%and 100%In concrete mix we used W/C ratio 0.48, concrete mix ratio was 1:1.5:3. Compressive strength calculation of all those samples and their comparison was the basic theme of the research. For this purpose cylinders were casted and checked under Universal Testing Machine (UTM) for compressive strength.

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