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# Re-Usage Of Waste Foundry Sand In Medium Strength Concrete



**SONARGAON UNIVERSITY**  
**DEPARTMENT OF CIVIL ENGINEERING**

**Submitted By**

Name	ID
MD AL-IMRAN	BCE-1602008011
MAHMUDUR RAHMAN ZIHAD	BCE-1602008230
MD. TANVIR HOSSAIN	BCE-1602008191
ASHRAFUZZAMAN ARIF	BCE-1503006006
ABDUR GAFFAR	BCE-1602008176

**Supervised by**

**MD. LUTFOR RAHMAN**

Assistant Professor,

Department of Civil Engineering

Sonargaon University (SU)

147/I, Green Road, Dhaka-1215

FALL-2019

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## 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**

<b>Name</b>	<b>ID</b>
MD AL-IMRAN	BCE-1602008011
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ASHRAFUZZAMAN ARIF	BCE-1503006006
ABDUR GAFFAR	BCE-1602008176

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**A THESIS BY**

**MD AL-IMRAN** **BCE-1602008011**

**MAHMUDUR RAHMAN ZIHAD** **BCE-1602008230**

**MD. TANVIR HOSSAIN** **BCE-1602008191**

**ASHRAFUZZAMAN ARIF** **BCE-1503006006**

**ABDUR GAFFAR** **BCE-1602008176**

In partial fulfillment of the requirement for the degree of  
Bachelor of Science (B.Sc.) in Civil Engineering  
**FALL-2019**

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***DEDICATED TO OUR  
PARENTS & TEACHERS***

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# 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 & Abdur 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. Lutfur Rahman**

Assistant Professor, Head,  
Supervisor, Project & Thesis  
Head of Civil Engineering Department  
Sonargaon University

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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.



MD AL-IMRAN  
BCE-1602008011

.....  
MAHMUDUR RAHMAN ZIHAD  
BCE-1602008230

.....  
MD. TANVIR HOSSAIN  
BCE-1602008191



.....  
ASHRAFUZZAMAN ARIF  
BCE-1503006006



.....  
ABDUR GAFFAR  
BCE-1602008176

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We would like to express our earnest gratitude to our supervisor, **Md. Lutfor Rahman** (Assistant Professor, Head of Civil Engineering Department) for giving us an opportunity to work on such an important topic. Their 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.

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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.

### The Authors

MD AL-IMRAN  
MAHMUDUR RAHMAN ZIHAD  
MD. TANVIR HOSSAIN  
ASHRAFUZZAMAN ARIF  
ABDUR GAFFAR

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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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