



Er.S.Rawuther Appa B.E.,  
Licensed Building Surveyor

+91 90039 99378

# Kamaal Construction

Good quality Good Service

DATE: 07.12.2022

To

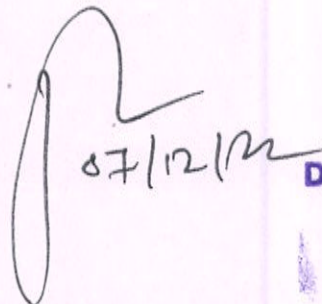
The Principal,  
Sri Bharathi Engineering College for Women,  
Kaikkurichi,  
Pudukkottai – 622 303.

Dear sir/madam,

We are in need of a Concrete Mix Design with the grade of M30. We wish to avail your services. In this regard, send your cost estimation to favour the above mentioned work.

Thanking you

Forwarded to  
HWS/airl

  
07/12/22

  
KAMAAL CONSTRUCTION  
No.24/4, Atthipa Complex,  
Barathidhasan Street,  
Aranthangi - 614616  
Cell : 9003999378

  
Dr. S. THILAGAVATHI M.E., Ph.D.,  
PRINCIPAL  
SRI BHARATHI ENGINEERING  
COLLEGE FOR WOMEN  
Kaikkurchi - 622 303, Pudukkottai Dt.



# SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN

(Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai)

Pudukkottai - Aranthangi Road,  
Kaikkurichi, Pudukkottai - 622 303.

Date : 8.12.2022

To

Kamaal Construction  
No: 24/4, Atthipa Complex  
Barathidhasan Street  
Aranthangi - 614 616

Respected Sir,

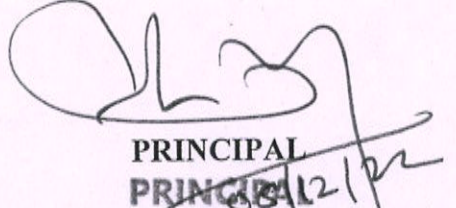
**Sub :** Submission of consultancy work quotation - Reg.

Greetings from Sri Bharathi Engineering college for women !!!

With reference to your letter dated 07.12.2022, we would like to inform you that the estimated cost for the Concrete Mix Design M30 is approximately Rs.15,000/-. Please note that this estimation is subject to change depending on any further project refinements or unforeseen circumstances.

If you have any questions or require additional information regarding the cost estimation or any other aspect of the project, please do not hesitate to contact us.

Thanking you

  
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SRI BHARATHI ENGINEERING  
COLLEGE FOR WOMEN  
KAIKKURICHI - 622 303.  
PUDUKKOTTAI DISTRICT

  
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# Kamaal Construction

Good quality Good Service

DATE:10.12.2022

To

The Principal,  
Sri Bharathi engineering college for women,  
Kaikkurichi,  
Pudukkottai – 622 303.

Dear Sir/Madam,

We granted the amount of Rs.15,000/-, in response to your quotation dated on 08.12.2022 for the successful delivery of the Concrete Mix Design M30 report.

If you have any queries, let us know we will clarify you with the same.

Thanking you

How / in /

Necessary action  
may please be taken  
to complete the work.

*[Handwritten signature]*  
10/12/22

*[Handwritten signature]*  
**KAMAAL CONSTRUCTION**  
No.24/4, Atthipa Complex,  
Barathidhasan Street,  
Aranthangi - 614616  
Cell : 9003999378

*[Handwritten signature]*  
**Dr. S.THILAGAVATHI M.E., Ph.D.,**  
PRINCIPAL  
**SRI BHARATHI ENGINEERING**  
**COLLEGE FOR WOMEN**  
Kaikkurichi - 622 303, Pudukkottai DL.



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Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai

**Kaikkurichi, Pudukkottai - 622 303.**

**DEPARTMENT OF CIVIL ENGINEERING**

**CONSULTANCY PROJECT WORK**

**REPORT**

**CONCRETE MIX DESIGN M30**

**SUBMITTED**

**TO**

**Kamaal Construction**

**No: 24/4, Atthipa Complex**

**Barathidhasan street**

**Aranthangi - 614 616**

**REPORT DATE : 16.12.2022**

  
**Dr. S.THILAGAVATHI M.E., Ph.D.,**  
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**COLLEGE FOR WOMEN**  
**Kaikkurchi - 622 303, Pudukkottai Dt.**

## CONSULTANCY PROJECT REPORT

### Test Conducted for Cement:

S.No	Name of the Test	Test Result	Range
1.	Specific gravity of cement	3.13	3.10-3.15
2.	Fineness of cement	365 m <sup>2</sup> / kg	300-400 m <sup>2</sup> / kg
3.	Consistency test on cement	16%	25-30%
4.	Setting time of cement	30-60 min	30-60 min

### Test Conducted for fine aggregate:

S.No	Name of the Test	Test Result	Range
1.	Specific gravity of fine aggregate	2.68	2.5-3
2.	Grading of fine aggregate	2.32	2.22-3.2
3.	Water absorption test on fine aggregate	1%	1-3%

### Test Conducted for coarse aggregate:

S.No	Name of the Test	Test Result	Range
1.	Specific gravity of coarse aggregate	2.78	2.5 - 2.9
2.	Water absorption test on coarse aggregate	0.7%	0.5 - 2%
3.	Elongation index	8%	5 - 10 %
4.	Flakiness index	19%	Less than 30%

### Admixture type:

Silica fume (10%)



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## STIPULATIONS FOR PROPORTIONING

- |                                      |                             |
|--------------------------------------|-----------------------------|
| a) Grade designation                 | : M30                       |
| b) Type of cement                    | : OPC 43 grade              |
| c) Type of mineral admixture         | : Silica fume               |
| d) Maximum nominal size of aggregate | : 20 mm                     |
| e) Minimum cement content            | : 320 kg/m <sup>3</sup>     |
| f) Maximum water cement ratio        | : 0.45                      |
| g) Workability                       | : 100mm                     |
| h) Exposure condition                | : severe                    |
| i) Method of concrete placing        | : pumping                   |
| j) Degree of supervision             | : good                      |
| k) Type of aggregate                 | : crushed angular aggregate |
| l) Maximum cement (OPC) content      | : 450 kg/m <sup>3</sup>     |

### 1. Target strength for mix proportioning (M30 grade)

$$f'_{ck} = f_{ck} + 1.65 s$$

$$\text{From IS 10262: 2009, } s = 5 \text{ N/mm}^2$$

$$\begin{aligned} \text{Target strength} &= 30 + 1.65 \times 5 \\ &= 38.25 \text{ N/mm}^2 \end{aligned}$$

### 2. Water cement ratio

From Table 5 of IS 456,

$$\text{Max. Water - cement ratio} = 0.45$$

$$\text{Adopt Water cement ratio} = 0.40$$

$$0.40 < 0.45$$

Hence O.K

  
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### 3. Water content

$$\begin{aligned}\text{Max. Water content for} \\ 100 \text{ slump} &= 186 + 6/100 \times 186 \\ &= 197 \text{ liters} \\ \text{Water content} &= 198 \times 0.71 \\ &= 160 \text{ liters}\end{aligned}$$

### 4. Cement and Silica fume content

$$\begin{aligned}\text{Water - cement ratio} &= 0.40 \\ \text{Cement content} &= 160 / 0.40 \\ &= 400 \text{ kg/m}^3 \\ \text{Min. cement content serve} &= 320 \text{ kg/m}^3 \\ 400 \text{ kg/m}^3 &> 320 \text{ kg/m}^3\end{aligned}$$

### 5. Volume of coarse and fine aggregate content

$$\begin{aligned}\text{The volume of coarse aggregate} &= 0.62 \times 0.9 \\ &= 0.56 \\ \text{The volume of fine aggregate} &= 1 - 0.56 \\ &= 0.44\end{aligned}$$

### 6. Mix calculation

- i. Volume of concrete =  $1 \text{ m}^3$
- ii. Volume of cement

$$\begin{aligned}&= \frac{\text{mass of cement}}{\text{specific gravity of cement}} \times \frac{1}{1000} \\ &= \frac{350}{3.37} \times \frac{1}{1000} \\ &= 0.105 \text{ m}^3\end{aligned}$$

  
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iii. Volume of water

$$\begin{aligned} &= \frac{\text{mass of water}}{\text{specific gravity of water}} \times \frac{1}{1000} \\ &= \frac{160}{1} \times \frac{1}{1000} \\ &= 0.160 \text{ m}^3 \end{aligned}$$

iv. Volume of 10% Silica fume

$$\begin{aligned} &= \frac{\text{mass of chemical ad.}}{\text{sp.gravity of chemical ad.}} \times \frac{1}{1000} \\ &= \frac{8}{2.28} \times \frac{1}{1000} \\ &= 0.003 \text{ m}^3 \end{aligned}$$

v. Volume of all in aggregate

$$\begin{aligned} &= [a - (b + c + a)] \\ &= 1 - (0.105 + 0.160 + 0.003) \\ &= 0.732 \text{ m}^3 \end{aligned}$$

vi. Mass of coarse aggregate

$$\begin{aligned} &= e \times \text{Volume of coarse aggregate} \times \\ &\text{Specific gravity of coarse aggregate} \\ &\times 1000 \\ &= 0.743 \times 0.56 \times 2.78 \times 1000 \\ &= 1156.7 \text{ kg} \end{aligned}$$

  
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vii. Mass of fine aggregate

=  $e \times \text{volume of fine aggregate} \times \text{Specific gravity of fine aggregate} \times 1000$

=  $0.743 \times 0.44 \times 2.68 \times 1000$

= 876.14 kg

### MIX PROPORTIONS

Cement = 300 kg/m<sup>3</sup>

Silica fume = 8 kg/m<sup>3</sup>

Water = 160 kg/m<sup>3</sup>

Fine aggregate = 1156.7 kg/m<sup>3</sup>

Coarse aggregate = 864.14 kg/m<sup>3</sup>

Water-cement ratio = 0.5

*RD* 16/12/22  
TEST CONDUCTED

*Pled* 16/12/22  
HoD

HOD / CIVIL

SRI BHARATHI ENGINEERING  
COLLEGE FOR WOMEN  
KAIKKURICHI,  
PUDUKKOTTAI - 622 303

*[Signature]*  
PRINCIPAL  
PRINCIPAL 16/12/22

SRI BHARATHI ENGINEERING  
COLLEGE FOR WOMEN  
KAIKKURICHI - 622 303.  
PUDUKKOTTAI DISTRICT

*Received*  
*S. Paul*  
16/12/22

*[Signature]*  
Dr. S. THILAGAVATHI M.E., Ph.D.,  
PRINCIPAL

SRI BHARATHI ENGINEERING  
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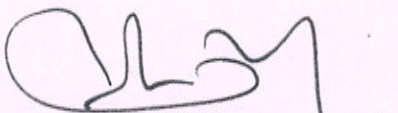
Pudukkottai - Aranthangi Road,  
Kaikkurichi, Pudukkottai - 622 303.

Date : 23.12.22

## UTILISATION CERTIFICATE

Certified that an amount of **Rs. 15,000/- (fifteen thousand only)** sanctioned during the year **2022** in favor of civil engineering received from **Kamaal Construction** has been utilized for the project consultancy work titled "**Concrete Mix Design M30**". The purpose for which it was sanctioned has been duly fulfilled and delivered as per the conditions of the grant.

  
23/12/22  
PROJECT INVESTIGATOR

  
PRINCIPAL  
PRINCIPAL  
SRI BHARATHI ENGINEERING  
COLLEGE FOR WOMEN  
KAIKKURICHI - 622 303.  
PUDUKKOTTAI DISTRICT

  
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