



THANVI  
ENGINEERING  
CONSORTIUM

DATE: 11.04.2023

To

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

Handwritten: Hon/Cs |  
Kindly do the needful  
11/04/23

Dear Sir/Madam,

Subject: Enquiry Regarding Consultancy Work Brochure – Compressive Strength test of Concrete Cubes (28 days).

Thank you for sharing the Consultancy Work Brochure of Sri Bharathi Engineering College for Women. We are particularly interested in your expertise in the Compressive Strength test of Concrete Cubes (28 days) and would like to enquire further about this service. Kindly provide information on the cost structure for the Compressive Strength test of Concrete Cubes (28 days).

Sincerely,

Handwritten signature: p. a. e. | 11/4/23  
Thanvi Engineering Consortium

Thanjavur.



Handwritten signature in green ink  
Dr. S. THILAGAVATHI M.E., Ph.D.,  
PRINCIPAL  
SRI BHARATHI ENGINEERING  
COLLEGE FOR WOMEN  
Kaikkurichi - 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.

To

Date : 13.04.2023..

Thanvi Engineering Consortium

No. 39, Podhupanithurai nagar

Near Maharaja Mahal

Pudukkottai Road

Thanjavur - 613 005

Respected Sir,

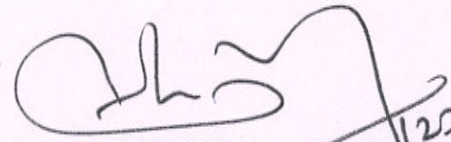
**Sub :** Submission of consultancy work quotation - Reg.

Greetings from Sri Bharathi Engineering college for women !!!

With reference to your letter dated 11.04.2023, we would like to inform you that the consultancy charges for the following test is furnished here

S.NO	TYPES OF TEST	CHARGES (IN Rs.)	UNIT
1	Compressive strength	900	One set (3 cubes)
<b>TOTAL</b>		<b>900</b>	

Thanking you

  
PRINCIPAL  
13/04/23

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

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





THANVI  
ENGINEERING  
CONSORTIUM

DATE: 17.04.2023

To

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

17/04/23  
for necessary action plan  
17/4/23

Dear Sir/Madam,

Subject: Sanction Reply - Cost Estimation for Compressive Strength test of Concrete Cubes (28 days).

I hope this letter finds you well. I am writing in response to the cost estimation provided for the Compressive Strength test of Concrete Cubes (28 days), as per our previous enquiry.

After careful consideration of the cost estimation, I am informing you that we have sanctioned the budget for the Compressive Strength test of Concrete Cubes (28 days) as per the proposed amount (Rs.900). We believe that the services offered by your college will meet our requirements and provide valuable insights for our upcoming project. We appreciate the transparency and detail provided in the cost estimation.

Please proceed with the necessary arrangements to initiate the Compressive Strength Testing process of Cement Concrete Cubes. If you require any further information or clarification, feel free to contact us.

Sincerely,

Er. S. Mahendran

Thanvi Engineering Consortium

Thanjavur



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



**SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN**

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

**Kaikkurichi, Pudukkottai - 622 303.**

**DEPARTMENT OF CIVIL ENGINEERING**

**CONSULTANCY TEST**

**REPORT**

**CEMENT CONCRETE CUBE TEST**

**SUBMITTED**

**TO**

**Thanvi Engineering Consortium**

**No. 39, Podhupanithurai nagar**

**Near Maharaja Mahal**

**Pudukkottai Road**

**Thanjavur – 613 005**

**REPORT DATE : 12.05.2023**

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



## CONSULTANCY TEST REPORT

Date of Casting: 14.04.2023

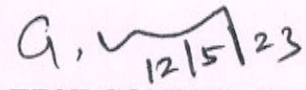
Date of Testing: 12.05.2023

Samples supplied : Cement Concrete Cubes 150mm×150mm×150mm

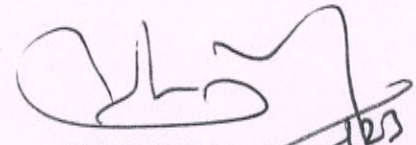
Test conducted : Compressive strength – 28 days

Grade of mix : M30

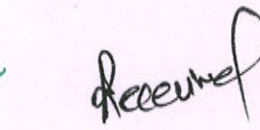
S.No	Size of Cube in mm	Ultimate Compressive load in kN	Compressive Strength for 28 days in N/mm <sup>2</sup>	Average Compressive Strength in N/mm <sup>2</sup>
1	150mm×150mm×150mm	332	14.76	15.97
2	150mm×150mm×150mm	350	15.56	
3	150mm×150mm×150mm	396	17.60	

  
12/5/23  
TEST CONDUCTED

  
12/5/23  
HOD / CIVIL  
SRI BHARATHI ENGINEERING  
COLLEGE FOR WOMEN  
KAIKKURICHI,  
PUDUKKOTTAI - 622 303

  
12/05/23  
PRINCIPAL  
PRINCIPAL  
SRI BHARATHI ENGINEERING  
COLLEGE FOR WOMEN  
KAIKKURICHI - 622 303.  
PUDUKKOTTAI DISTRICT

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

  
12/05/23





# SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN

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

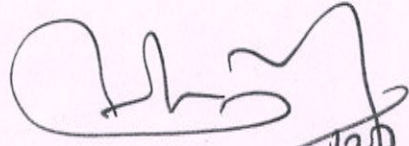
Pudukkottai - Aranthangi Road,  
Kaikkurichi, Pudukkottai - 622 303.

Date : 12/05/23


## UTILISATION CERTIFICATE

Certified that an amount of **Rs. 900/- (nine hundred only)** sanctioned during the year **2023** in favor of civil engineering received from **Thanvi Engineering Consortium** has been utilized for the project consultancy work titled "**Cement Concrete Cube Test**". The purpose for which it was sanctioned has been duly fulfilled and delivered as per the conditions of the grant.

G. 12.05.23  
PROJECT INVESTIGATOR

  
PRINCIPAL  
(20/5/23)

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

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





THANVI  
ENGINEERING  
CONSORTIUM

DATE: 15.12.2022

To

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

Itan / ai |  
Kindly do the needful  
15/12/22

Dear Sir/Madam,

Subject: Enquiry Regarding Consultancy Work Brochure - Concrete Mix Design M30.

Thank you for sharing the Consultancy Work Brochure of Sri Bharathi Engineering College for Women. We are particularly interested in your expertise in Concrete Mix Design M30 and would like to enquire further about this service. Kindly provide information on the cost structure for Concrete Mix Design M30.

Sincerely,

Thanvi Engineering Consortium

Thanjavur.

  
15/12/22



  
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 : 16.12.2022

To

Thanvi Engineering Consortium  
No. 39, Podhupanithurai nagar  
Near Maharaja Mahal  
Pudukkottai Road  
Thanjavur – 613 005

Respected Sir,

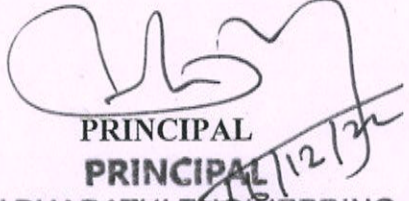
**Sub :** Submission of consultancy work quotation – Reg.

Greetings from Sri Bharathi Engineering college for women !!!

With reference to your letter dated 15.12.2022, 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

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

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





THANVI  
ENGINEERING  
CONSORTIUM

DATE: 17.12.2022

To

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

Hand / air /  
for necessary action plan  
17/12/22

Dear Sir/Madam,

Subject: Sanction Reply - Cost Estimation for Concrete Mix Design M30

I hope this letter finds you well. I am writing in response to the cost estimation provided for the Concrete Mix Design M30 services, as per our previous enquiry.

After careful consideration of the cost estimation, I am informing you that we have sanctioned the budget for the Concrete Mix Design M30 as per the proposed amount (Rs.15000). We believe that the services offered by your college will meet our requirements and provide valuable insights for our upcoming project. We appreciate the transparency and detail provided in the cost estimation.

Please proceed with the necessary arrangements to initiate the Concrete Mix Design M30 process. If you require any further information or clarification, feel free to contact us.

Sincerely,

Er. S. Mahendran, Principal  
Thanvi Engineering Consortium

Thanjavur



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





**SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN**

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**

**Thanvi Engineering Consortium**

**No. 39, Podhupanithurai nagar**

**Near Maharaja Mahal**

**Pudukkottai Road**

**Thanjavur – 613 005**

**REPORT DATE : 23.12.2022**

  
**Dr. S.THILAGAVATHI M.E., Ph/D.,**  
PRINCIPAL  
**SRI BHARATHI ENGINEERING**  
**COLLEGE FOR WOMEN**  
**Kaikkurichi - 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	3.12	3.10-3.15
2.	Fineness of cement	352 m <sup>2</sup> / kg	300-400 m <sup>2</sup> / kg
3.	Consistency test on cement	30%	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	2.67	2.5-2.9
2.	Grading of fine aggregate	2.9	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	2.8	2.5 - 2.9
2.	Water absorption test on coarse aggregate	0.4%	0.5 - 2%
3.	Elongation index	11%	5 - 10 %
4.	Flakiness index	1%	Less than 30%

### Admixture type:

Fly ash (30%)

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



## STIPULATIONS FOR PROPORTIONING

- |                                      |                             |
|--------------------------------------|-----------------------------|
| a) Grade designation                 | : M30                       |
| b) Type of cement                    | : OPC 43 grade              |
| c) Type of mineral admixture         | : 30% of Fly ash            |
| 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 (M40 grade)

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

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,

Max. Water – cement ratio = 0.45

Adopt Water cement ratio = 0.40

$0.40 < 0.45$

Hence O.K



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



### 3. Water content

$$\begin{aligned} \text{Max. Water content for} \\ 20 \text{ mm} &= 186 \text{ liters (for 25 to 50 mm)} \\ \text{Then with superplasticizers} &= 186 \times 0.71 \\ &= 132 \text{ liters} \end{aligned}$$

### 4. Cement and Fly ash content

$$\begin{aligned} \text{Water - cement ratio} &= 0.40 \\ \text{Cement content} &= \frac{132}{0.40} \end{aligned}$$

$$= 330 \text{ kg/m}^3$$

$$\text{Min. cement content serve} = 320 \text{ kg/m}^3$$

$$350 \text{ kg/m}^3 > 320 \text{ kg/m}^3$$

$$\begin{aligned} \text{Cementitious material content} &= 330 \times 1.10 \\ &= 363 \text{ kg/m}^3 \end{aligned}$$

$$\text{Water content} = 132 \text{ liters}$$

$$\text{Water cement ratio} = \frac{132}{363}$$

$$= 0.363$$

Fly ash @ 30% of

$$\text{Total cementitious content} = \frac{363 \times 30}{100}$$

$$= 108.9 \text{ kg/m}^3$$

$$\text{Cement (OPC)} = 363 - 108.9$$

$$= 254.1 \text{ kg/m}^3$$

Saving of cement while using

$$\text{Fly ash} = 330 - 254.1$$

$$= 75 \text{ kg/m}^3$$



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



## 5. Volume of coarse and fine aggregate content

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

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

## 6. Mix calculation

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

ii. Volume of cement

$$= \frac{\text{mass of cement}}{\text{specific gravity of cement}} \times \frac{1}{1000}$$

$$= \frac{254}{3.12} \times \frac{1}{1000}$$

$$= -0.0816 \text{ m}^3$$

iii. Volume of water

$$= \frac{\text{mass of water}}{\text{specific gravity of water}} \times \frac{1}{1000}$$

$$= \frac{132}{1} \times \frac{1}{1000}$$

$$= 0.132 \text{ m}^3$$

iv. Volume of fly ash

$$= \frac{\text{mass of flyash}}{\text{specific gravity of flyash}} \times \frac{1}{1000}$$

$$= \frac{108}{1} \times \frac{1}{1000}$$

$$= 0.108 \text{ m}^3$$

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



v. Volume of chemical admixture

$$= \frac{7}{1.145} \times \frac{1}{1000}$$

$$= 0.007 \text{ m}^3$$

vi. Volume of all in aggregate

$$= [a - (b + c + a)]$$

$$= 1 - (0.0806 + 0.108 + 0.132 + 0.007)$$

$$= 0.67 \text{ m}^3$$

vii. Mass of coarse aggregate

$$= e \times \text{Volume of coarse aggregate} \times$$

Specific gravity of coarse aggregate x

$$1000$$

$$= 0.672 \times 0.56 \times 2.80 \times 1000$$

$$= 1053 \text{ kg}$$

viii. Mass of fine aggregate

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

gravity of fine aggregate x 1000

$$= 0.672 \times 0.44 \times 2.74 \times 1000$$

$$= 787 \text{ kg}$$

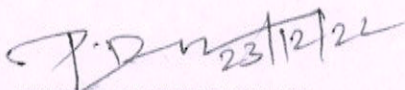


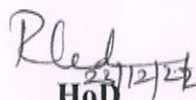
**Dr. S.THILAGAVATHI M.E., Ph.D.,**  
PRINCIPAL  
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Kalkkurchi - 622 303, Pudukkottai Dt.,

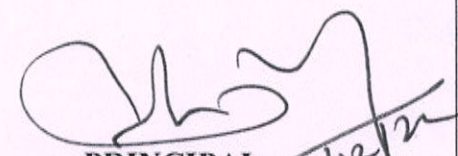


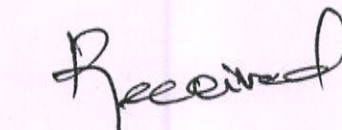
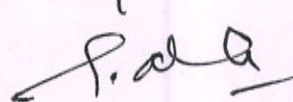
## MIX PROPORTIONS

Cement	= 254 kg/m <sup>3</sup>
Fly ash	= 108 kg/m <sup>3</sup>
Water	= 132 kg/m <sup>3</sup>
Fine aggregate	= 787 kg/m <sup>3</sup>
Coarse aggregate	= 1053 kg/m <sup>3</sup>
Water-cement ratio	= 0.363

  
TEST CONDUCTED

  
HoD  
HOD / CIVIL  
SRI BHARATHI ENGINEERING  
COLLEGE FOR WOMEN  
KAIKKURICHI,  
PUDUKKOTTAI - 622 303

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

  
  
23/12/22.

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





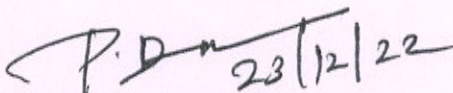
# SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN

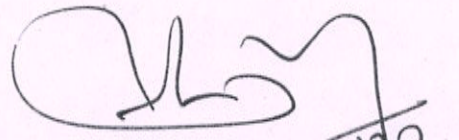
(Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai)  
Pudukkottai - Aranthangi Road,  
Kaikkurichi, Pudukkottai - 622 303.

Date : 23.12.2022

## 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 **Thanvi Engineering Consortium** 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.

  
PROJECT INVESTIGATOR

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

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