



THANVI  
ENGINEERING  
CONSORTIUM

DATE: 11.07.2022

To

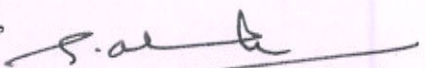
The Principal,  
Sri Bharathi Engineering College for Women,  
Kaikkurichi,  
Pudukkottai – 622 303.

Dear Sir/Madam,

Subject: Enquiry Regarding Consultancy Work Brochure – Tensile Strength Test on Steel rods.

Thank you for sharing the Consultancy Work Brochure of Sri Bharathi Engineering College for Women. We are particularly interested in your expertise in Tensile Strength Test on Steel Rods and would like to enquire further about this service. Kindly provide information on the cost structure for the Tensile strength of steel (with sizes of 10mm-2 nos. and 12mm-2 nos. each for 3 grades).

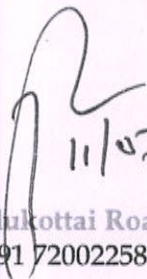
Sincerely,

  
Thanvi Engineering Consortium 11/7/22

Thanjavur.



Forwarded to  
H/O/CAI

  
11/07/22



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 : 12/07/2022

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 !!!

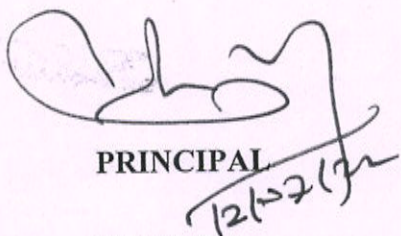
With reference to your letter dated 11.07.2022, we would like to inform you that, the consultancy work 'Tensile Strength Test on Steel Rod' may cost around as Rs.3000/-. The detailed charge for the following test is furnished here:

S.NO	TYPE OF TEST	CHARGES IN Rs. PER UNIT	UNIT	TOTAL CHARGES IN Rs.
1	Tensile strength and % of Elongation	250	12	3000

The proposed work would be finished within 10 days. We appreciate your consideration of our proposal; feel free to contact us if you have any questions.

Thanking you

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

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



THANVI  
ENGINEERING  
CONSORTIUM

DATE: 15.07.2022

To

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

HOD / CE /  
for necessary action  
Please  
15/07/22

Dear Sir/Madam,

Subject: Sanction Reply - Cost Estimation for Tensile Strength Test on Steel Rod.

I hope this letter finds you well. I am writing in response to the cost estimation provided for the Tensile Strength Test - Steel Rod, as per our previous enquiry.

After careful consideration of the cost estimation, I am informing that we have sanctioned the budget for the Tensile Strength Test on Steel Rod as per the proposed amount (Rs.3000). 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 Tensile Strength Testing process. If you require any further information or clarification, feel free to contact us.

Sincerely,

Er. *S. Mahendran*

Thanvi Engineering Consortium

Thanjavur



*S. Thilagavathi*  
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, Affiliated to Anna University, Chennai  
**Kaikkurichi, Pudukkottai - 622 303.**

**DEPARTMENT OF CIVIL ENGINEERING**

**CONSULTANCY TEST**

**REPORT**

**STEEL ROD STRENGTH TESTING**

**SUBMITTED**

**TO**

**Thanvi Engineering Consortium**

**No. 39, Podhupanithurai nagar**

**Near Maharaja Mahal**

**Pudukkottai Road**

**Thanjavur – 613 005**

**REPORT DATE : 20.07.2022**

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

## CONSULTANCY TEST REPORT

**DATE OF TESTING:** 20.07.2022

**SAMPLES SUPPLIED:** TMT steel rods 10mm - 2 nos, 12mm – 2 nos

**TESTS CONDUCTED:** Tensile Strength, Percentage of Elongation (%)

**GRADE OF STEEL** : Fe 415D

S. No	Size of Bars in mm	Ultimate load in kN	Tensile strength in N/mm <sup>2</sup>	Elongation length in mm	Percentage of Elongation (%)
1	10mm – specimen I	43.70	556.40	23.30	19.50
2	10mm – specimen II	45.10	574.20	23.00	18.00
3	12mm – specimen I	66.00	583.60	22.80	17.00
4	12mm – specimen II	63.90	565.00	22.70	16.50

**SAMPLES SUPPLIED :** TMT steel rods 10mm - 2 nos, 12mm – 2 nos

**TESTS CONDUCTED :** Tensile Strength, Percentage of Elongation (%)

**GRADE OF STEEL** : Fe 500D

S. No	Size of Bars In mm	Ultimate load in kN	Tensile strength in N/mm <sup>2</sup>	Elongation length in mm	Percentage of Elongation (%)
1	10mm – specimen I	52.50	668.50	22.10	13.50
2	10mm – specimen II	54.00	687.50	22.20	14.00
3	12mm – specimen I	77.00	680.80	20.70	13.00
4	12mm – specimen II	78.60	695.00	21.90	12.50

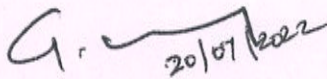
  
**Dr. S.THILAGAVATHI** (M.E., Ph.D.),  
PRINCIPAL  
SRI BHARATHI ENGINEERING  
COLLEGE FOR WOMEN  
Kaikkurchi - 622 303, Pudukkottai Dt.

**SAMPLES SUPPLIED :** TMT steel rods 10mm - 2 nos, 12mm – 2 nos

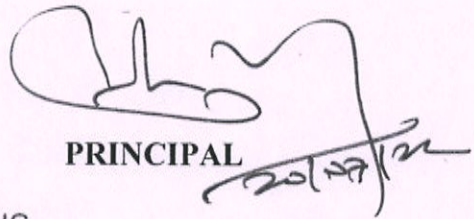
**TESTS CONDUCTED :** Tensile Strength, Percentage of Elongation (%)

**GRADE OF STEEL :** Fe 550D

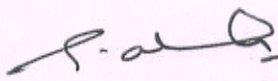
S. No	Size of Bars In mm	Ultimate load in kN	Tensile strength in N/mm <sup>2</sup>	Elongation length in mm	Percentage of Elongation (%)
1	10mm – specimen I	56.00	713.00	21.45	10.00
2	10mm – specimen II	57.40	730.80	21.35	9.50
3	12mm – specimen I	82.00	725.00	20.90	7.00
4	12mm – specimen II	84.30	745.40	21.06	8.00


  
20/07/2022  
**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

Received by

  
20/07/22

  
**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.

Date : 21/07/22

## UTILISATION CERTIFICATE

Certified that an amount of **Rs. 3000/- (three 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 "**Tensile strength test on steel rod**". The purpose for which it was sanctioned has been duly fulfilled and delivered as per the conditions of the grant.

G. ✓ 21/07/22  
PROJECT INVESTIGATOR

PRINCIPAL  
21/07/22

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: 15.06.2022

To

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

Dear Sir/Madam,

Subject: Enquiry Regarding Consultancy Work Brochure - Concrete Mix Design M35.

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 M35 and would like to enquire further about this service. Kindly provide information on the cost structure for Concrete Mix Design M35.

Sincerely,

Thanvi Engineering Consortium

Thanjavur.



*[Handwritten signature]*  
15/6/22

*[Handwritten note]*  
Forwarded to  
HOD/ci/

*[Handwritten signature]*  
15/06/22

*[Handwritten signature]*  
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.

Date : 17-06-2022

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.

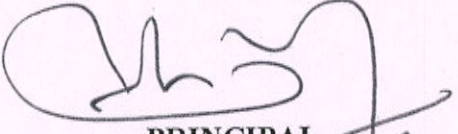
Greetings from Sri Bharathi Engineering college for women !!!

With reference to your letter dated 15.06.2022, we would like to inform you that the estimated cost for the Concrete Mix Design M35 is approximately Rs.10,000/-. 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

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

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



THANVI  
ENGINEERING  
CONSORTIUM

DATE: 20.06.2022

To

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

Handwritten note: Handwritten  
for necessary action  
Please

Dear Sir/Madam,

Subject: Sanction Reply - Cost Estimation for Concrete Mix Design M35

I hope this letter finds you well. I am writing in response to the cost estimation provided for the Concrete Mix Design M35 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 M35 as per the proposed amount (Rs.10000). 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 M35 process. If you require any further information or clarification, feel free to contact us.

Sincerely,

Er. S. Mahendran

Handwritten signature: S. Mahendran  
20/06/22

Thanvi Engineering Consortium

Thanjavur



Handwritten signature in green ink

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, Affiliated to Anna University, Chennai

**Kaikkurichi, Pudukkottai - 622 303.**

**DEPARTMENT OF CIVIL ENGINEERING**

**CONSULTANCY PROJECT WORK**

**REPORT**

**CONCRETE MIX DESIGN (M35)**

**SUBMITTED**

**TO**

**Thanvi Engineering Consortium**

**No. 39, Podhupanithurai nagar**

**Near Maharaja Mahal**

**Pudukkottai Road**

**Thanjavur – 613 005**

**REPORT DATE : 24.06.2022**

  
**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	3.13	3.10-3.15
2.	Fineness of cement	338 m <sup>2</sup> / kg	300-400 m <sup>2</sup> / kg
3.	Consistency test on cement	35%	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	2.5-2.9
2.	Grading of fine aggregate	2.56	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	2.79	2.5 - 2.9
2.	Water absorption test on coarse aggregate	0.3%	0.5 - 2%
3.	Elongation index	7%	5 - 10 %
4.	Flakiness index	2%	15 - 20%

### Admixture type:

Ground granulated blast-furnace slag (20%)

  
**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                 | : M35                       |
| b) Type of cement                    | : OPC 43 grade              |
| c) Type of mineral admixture         | : GGBS                      |
| 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 (M35 grade)

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

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

$$\begin{aligned} \text{Target strength} &= 35 + 1.65 \times 5 \\ &= 43.25 \text{ N/mm}^2 \end{aligned}$$

### 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



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

### 3. Water content

$$\begin{aligned}\text{Max. Water content for} \\ 100 \text{ slump} &= 186 + 6/100 \times 186 \\ &= 197 \text{ liters} \\ \text{Water content} &= 197 \times 0.71 \\ &= 140 \text{ liters}\end{aligned}$$

### 4. Cement content

$$\begin{aligned}\text{Water - cement ratio} &= 0.40 \\ \text{Cement content} &= 140 / 0.40 \\ &= 350 \text{ kg/m}^3 \\ \text{Min. cement content serve} &= 320 \text{ kg/m}^3 \\ 350 \text{ kg/m}^3 &> 320 \text{ kg/m}^3\end{aligned}$$

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

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

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

### 6. Mix calculation

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

ii. Volume of cement

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

$$= \frac{350}{3.13} \times \frac{1}{1000}$$

$$= 0.1118 \text{ m}^3$$

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

iii. Volume of water

$$\begin{aligned} &= \frac{\text{mass of water}}{\text{specific gravity of water}} \times \frac{1}{1000} \\ &= \frac{140}{1} \times \frac{1}{1000} \\ &= 0.140 \text{ m}^3 \end{aligned}$$

iv. Volume of chemical admixture

$$\begin{aligned} &= \frac{\text{mass of chemical ad.}}{\text{sp.gravity of chemical ad.}} \times \frac{1}{1000} \\ &= \frac{7}{1.45} \times \frac{1}{1000} \\ &= 0.006 \text{ m}^3 \end{aligned}$$

v. Volume of all in aggregate

$$\begin{aligned} &= [a - (b + c + a)] \\ &= 1 - (0.1118 + 0.140 + 0.006) \\ &= 0.753 \text{ m}^3 \end{aligned}$$

vi. Mass of coarse aggregate

$$\begin{aligned} &= e \times \text{Volume of coarse aggregate} \times \\ &\text{Specific gravity of coarse aggregate} \\ &\times 1000 \\ &= 0.743 \times 0.56 \times 2.74 \times 1000 \\ &= 1140 \text{ kg} \end{aligned}$$

  
**Dr. S. THILAGAVATHI M.E., PH.D.,**  
PRINCIPAL  
SRI BHARATHI ENGINEERING  
COLLEGE FOR WOMEN  
Kalkkurchi - 622 903, Pudukkottai Dt.

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 = 350 kg/m<sup>3</sup>

GGBS = 6.5 kg/m<sup>3</sup>

Water = 140 kg/m<sup>3</sup>

Fine aggregate = 876.14 kg/m<sup>3</sup>

Coarse aggregate = 1140 kg/m<sup>3</sup>

Water-cement ratio = 0.4

*P.D. 24/6/22*  
TEST CONDUCTED

*R. Reddy 24/6/22*  
HoD

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

*[Signature]*  
PRINCIPAL  
PRINCIPAL 24/6/22  
SRI BHARATHI ENGINEERING  
COLLEGE FOR WOMEN  
KAIKKURICHI - 622 303.  
PUDUKKOTTAI DISTRICT

*Received.*

*S. alga*  
24/06/22

*[Signature]*  
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

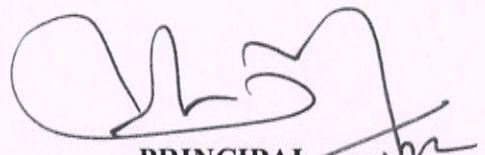
(Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai)  
Pudukkottai - Aranthangi Road,  
Kaikkurichi, Pudukkottai - 622 303.

Date : 24.06.22

## UTILISATION CERTIFICATE

Certified that an amount of **Rs. 10,000/- (ten 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 M35**". 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.