

GSTIN: 33AABFS9025Q1ZS



S.K.V. Engineering Constructions

119/54-A, Amma Mandapam Road, Srirangam, Trichy - 620 006.

Ph: 0431-2433132, Mob: +91 94431 44132, +91 95789 63440

Email: skvconstruct@yahoo.com Web : www.skvconstructions.com

Date: 02.08.2021

To

The Principal,

Indra Ganesan College of Engineering,

Manikandam,

Trichy-620 012

Dear Sir/Madam,

Subject: Enquiry Regarding consultancy work brochure- Compressive Strength test on Cubes Grade M25 & Concrete Mix Design.

We are in need of a Compressive Strength test on Cubes Grade M25 & Concrete Mix Design. We wish to avail your services. In this regard, send your cost estimation to favour the above mentioned work.

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal

Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

S.R. Sridhar
Structural Engineering
SKV Engineering Constructions



09.08.2021

To

S.K.V.Engineering Constructions
119/54-A, Amma Mandapam Road
Srirangam, Trichy-620 006

Respected Sir,

Sub: Submission of consultancy work quotation- Reg.

Greetings from Indra Ganesan College of Engineering!!!

We thank you for considering our consultancy work brochure and we received your requirements about Compressive Strength Test on Cube and Concrete Mix Design. In this connection, we would like to inform you that the consultancy charges for the following test is furnished here.

S.NO	TYPE OF TEST	GRADE OF MIX	CHARGES (IN Rs.)	UNIT
1	Compressive strength test on cube	M 20	20000	One set (3cubes)
2	Concrete Mix Design	M30		1
	TOTAL		20000	-

We request you to kindly consider the above proposed consultancy charges and we are eagerly awaiting for your kind sanction of the consultancy work.

Thanking you

PROJECT INVESTIGATOR



Dr. S. BHARATHI RAJA
PRINCIPAL

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Email: skvconstruct@yahoo.com Web: www.skvconstructions.com

Date: 23.08.2021

To

The Principal,

Indra Ganesan College of Engineering,

Manikandam,

Trichy-620 012

Dear Sir/Madam,

Subject: Sanctioned Amount - Cost Estimation for Compressive Strength test on Cubes Grade M25 & Concrete Mix Design.

We granted the **amount of Rs.20000/-, in** response to your quotation dated on 09.08.2021 for the successful delivery of the Compressive Strength test on Cubes Grade M25 & Concrete Mix Design.

Dr. G. Balakrishnan, M.E., Ph.D.
Principal

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Indra Ganesan

COLLEGE OF ENGINEERING

Madurai Main Road (NH-45B), Manikandam, Tiruchirappalli- 620 012

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

CONSULTANCY PROJECT ENDOWMENT TEST REPORT

TESTING ON CUBE & CONCRETE MIX DESIGN

SUBMITTED

TO

S.K.V.Engineering Constructions

119/54-A, Amma Mandapam Road

Srirangam, Trichy-620006

Delivery Date: 18.09.2021

**Dr. G. Balakrishnan, M.E., Ph.D.,
Principal**

**Indra Ganesan College of Engineering
IC Valley, Madurai Main Road
Manikandam, Trichy-620 012.**

CONSULTANCY TEST REPORT

Date of Casting: 23.08.2021

Date of Testing: 18.09.2021

Sample supplied : Cement Concrete Cubes 150mm x150mm x 150mm

Test conducted : Compressive Strength- 28 days

Grade of mix : M20

S.No	Size of Cubes in mm	Ultimate Compressive load in Kn	Compressive Strength for 25 days in N/mm ²	Average Compressive Strength in N/mm ²
1	150mm x150mm x 150mm	345	15.33	16.96
2	150mm x150mm x 150mm	445	19.77	
3	150mm x150mm x 150mm	355	15.78	

Sample : Concrete Mix Design M30

Test Conducted for Cement:

S.No	Name of the Test	Test Result	Range
1	Specific gravity of cement	3.11	3.10-3.15
2	Fineness of cement	380 m ² / kg	350-400 m ² / kg
3	Consistency test on cement	21%	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	2.62	2.5-2.9
2	Grading of fine aggregate	2.40	2.22-3.2
3	Water absorption test on fine aggregate	1.5%	1-3%


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Test Conducted for Coarse Aggregate:

S.No	Name of the Test	Test Result	Range
1	Specific gravity of coarse aggregate	2.60	2.5-2.9
2	Water absorption test on coarse aggregate	0.9%	0.5-2%
3	Elongation index	7.5%	5-10%
4	Flakiness index	18.1%	15-20%

Admixture type:

Triethanolamine (1.5%)

STIPULATION FOR PROPORTIONING:

- a) Grade designation : M30
- b) Type of cement : OPC 43 grade
- c) Type of mineral admixture : 1.5% of Triethanolamine
- d) Maximum nominal size of aggregate : 20mm
- e) Minimum cement content : 280 kg/m³
- f) Maximum water cement ratio : 0.45
- g) Workability : 100mm
- h) Exposure condition : Medium
- i) Method of concrete placing : Pumping
- j). Degree of supervision : Good
- k) Type of aggregate : Crushed Angular aggregate
- l) Maximum cement(OPC) content : 420 kg/m³

1. Target strength for mix proportioning (M 35 grade)

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

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

$$\text{Target strength} = 35 + 1.65 \times 5$$


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$$= 43.25 \text{ N/mm}^2$$

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 ok

3. Water content

Max. water content for

20mm = 186 liters (for 25 to 50mm)

Then with superplasticizers = 186×0.71

= 132 liters

4. Cement and triethanolamine

Water-cement ratio = 0.40

Cement content = $132/0.40$
= 330 kg/ m³

Min. cement content mild = 320 kg/ m³


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

Cementitious material content = 320×1.10
= 363 kg/ m³

Water content = $132/363$
= 0.363

Cement (OPC) = $363 - 108.9$
= 254.1 kg/ m³

Saving of cement while using Fly ash = 320-254.1


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$$= 65.9 \text{ kg/ m}^3$$

5. Volume of coarse and fine aggregate content

$$\begin{aligned} \text{The volume of coarse aggregate} &= 0.61 \times 0.7 \\ &= 0.42 \end{aligned}$$

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

6. Mix calculation

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

ii. volume of cement $= \text{mass of cement} / \text{specific gravity of cement} \times 1/1000$
 $= 2/3.12 \times 1/1000$
 $= 0.0816 \text{ m}^3$

iii. volume of water $= \text{mass of water} / \text{specific gravity of water} \times 1/1000$
 $= 132/1 \times 1/1000$
 $= 0.132 \text{ m}^3$

iv. Volume of chemical admixture $= \text{mass of chemical ad.} / \text{sp.gravity of chemical ad.} \times 1/1000$
 $= 7/1.121 \times 1/1000$
 $= 0.006 \text{ m}^3$

v. Volume of all in aggregate $= (a - (b+c+a))$
 $= 1 - (0.0712 + 0.112 + 0.124 + 0.006)$
 $= 0.61 \text{ m}^3$

vi. Mass of coarse aggregate $= e \times \text{volume of coarse aggregate specific} \times 1000$
 $= 0.672 \times 0.47 \times 2.60 \times 1000$
 $= 821.18 \text{ kg}$

vii. Mass of fine aggregate $= e \times \text{volume of fine aggregate} \times \text{specific gravity of fine aggregate} \times 1000$
 $= 0.672 \times 0.42 \times 2.62 \times 1000$
 $= 739.46 \text{ kg}$


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MIX PROPORTIONS

Cement = 252 kg/ m³

Water = 135 kg/ m³

Fine aggregate = 739 kg/ m³


Coarse aggregate = 821 kg/ m³

Cement: Coarse Aggregate: Fine Aggregate = 1:1.10: 2.20

Water-cement ratio = 0.341



TEST CONDUCTED



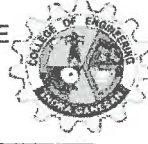
Dr.S.BHARATHIRAJA

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18.09.2021

Trichy

UTILIZATION CERTIFICATE

Certified that an amount of **Rs 20000/- (Twenty Thousand Only)** sanctioned during the year **2021-2022** in favor of civil engineering received from **S.K.V.Engineering Constructions** has been utilized for the project consultancy work titled **"Testing on Cube and Concrete Mix Design"**. The purpose for which it was sanctioned has been duly fulfilled and delivered as per the conditions of the grant.

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