



SRI BHARATHI

ENGINEERING COLLEGE FOR WOMEN

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

www.sbec.edu.in

NAAC - AQAR DOCUMENTS



Quality Indicator Frame Work

Criterion – 3

Research, Innovations and Extension

Submitted by

IQAC

Internal Quality Assurance Cell

Sri Bharathi Engineering College for Women



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 :


TO WHOMSOEVER IT MAY CONCERN

This is to certify that the following are the grants received from Non-Government agencies in the form of endowments (project development work, consultancy work) during the year (2023-2024) (INR in Lakhs).

Number of endowments received: 08

Total amount received (INR in Lakhs): Rs 3.935 lakhs




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



SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN

(Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai-25)

Kaikkurichi, Pudukkottai, Tamil Nadu – 622 303, India



3.1.1.1 Total Grants from Government and non-governmental agencies for research projects / endowments in the institution during the year (INR in Lakhs)

S.No	Name of the research project/ endowment	Name of the Principal Investigator/Co-investigator	Department of Principal Investigator	Year of Award	Amount Sanctioned	Name of the Funding Agency	Type (Government/non-Government)	Page No
ACADEMIC YEAR 2023-2024								
1.	Precise Water Management in Piped and Micro Irrigation Network	Mr.B.Reuben	Electronics and Communication Engineering	2023-2024	1.075	HI-tech Electronics	Non-Government	5
2.	Design and development of autonomous drone for forest fire and animal detection	Dr.B.Prakash Ayyappan	Electrical and Electronics Engineering	2023-2024	1.08	Power integrated solutions	Non-Government	14

S.No	Name of the research project/ endowment	Name of the Principal Investigator/Co-investigator	Department of Principal Investigator	Year of Award	Amount Sanctioned	Name of the Funding Agency	Type (Government/non-Government)	Page No
3.	Estimation of power rating and number of solar PVV panels required for installation in domestic appliances	Mr.T.Parthiban	Electrical and Electronics Engineering	2023-2024	0.04	PV solar power tech	Non-Government	23
4.	Shopping card system	Mrs.R.Meena	Computer Science and Engineering	2023-2024	0.66	Ponnu Supermarket	Non-Government	30
5.	Garbage Monitoring System	Mrs.R.Meena	Computer Science and Engineering	2023-2024	0.44	Meck Teck Research Foundation	Non-Government	43
6.	Concrete Mix Design	Mrs.R.Padma Rani	Civil Engineering	2023-2024	0.15	Kamaal Constructions	Non-Government	54
7.	Concrete Mix Design	Mrs.R.Padma Rani	Civil Engineering	2023-2024	0.15	Kamaal Constructions	Non-Government	64
8.	Design of residential building	Mr.K.Veeraselvam	Civil Engineering	2023-2024	0.4	TRM constructions	Non-Government	73



DATE: 01.02.2024

To

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

Forwarded to

HOD/ECE

[Handwritten signature]
01/02/24

Dear Sir/Madam,

Thank you for sharing the Consultancy Work Brochure of **Sri Bharathi Engineering College for Women**. We are particularly interested in your project in **"Precise Water Management in Piped and Micro Irrigation Network"** to Predict Dynamic Crop Water Demands & Promote Environmental Sustainability and would like to enquire further about this service. Kindly provide information on the cost of Precise Water Management in Piped and Micro Irrigation Network.

Thanking You

Authorized Signatory,

M. Jesuraj
(M.JESURAJ)
Chief Executive

[Handwritten 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.

To

Date : 12/02/2024

Mr.M.Jesu Raj
Managing Director
Vasanth Nagar, Karumandapam,
Trichy - 620001

Respected Sir,

Sub : Submission of Consultancy Work quotation - Reg.
Greetings from Sri Bharathi Engineering College for Women,

With reference to your letter dated 01.02.2024, regarding the development of a product to Precise Water Management in Piped and Micro Irrigation Network, we would like to submit the quotation to carry out the product development consultancy work of your esteemed organization. We would like to bring to your kind notice that, the product of "Precise Water Management in Piped and Micro Irrigation Network" unit price may cost around Rs 5000/- as listed in the below table for your kind perusal.

Sl. No.	Particulars	Unit Rate(Rs)	Quantity (Rs)	Amount in Rs
1.	Unit Cost including Network Design	4,300	25	1,07,500
				1,07,500
			Total Payable	1,07,500
Project Design and delivery- 50 days. Minimum of 25 pieces has to be ordered initially.				

The tentative days required to complete the proposed work will be 50 days. We are looking forward to kind consideration about the product consultancy work proposal and we request you to please do not hesitate to contact us for any queries.

Thanking You

Dr. S. THILAGAVATHI M.E., Ph.D.,
PRINCIPAL

SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN

Kaikkurichi - 622 303, Pudukkottai Dt.

PRINCIPAL
PRINCIPAL

B. Peru

PROJECT INVESTIGATOR

Ph: 04322 - 242768

website : www.sbec.edu.in

Mobile: 99422 28029, 97509 28029

e-mail : sribharathienggcollege@gmail.com

SRI BHARATHI ENGINEERING

COLLEGE FOR WOMEN

KAIKKURICHI - 622 303.

PUDUKKOTTAI DISTRICT



Date: 23.02.2024

To

The Principal,
Sri Bharathi Engineering College for Women,
Kaikkurichi,
Pudukkottai-606 303.

*HOD/ECE
for necessary action
please.
24/02/24*

Dear Sir / Madam,

Concerning your Quotation dated on 12.02.2024. We accept your proposal for the product development consultancy work "**Precise Water Management in Piped and Micro Irrigation Network**" as per the quotation. In Consultation with our project investment team, we are ready to invest in the design and development of a "Precise Water Management in Piped and Micro Irrigation Network". We would like to order a 25 quantity as our first order.

Herewith we have sanctioned the total financial seed of Rs. 1, 07, 500/- to carry out products development consultancy work for the above mentioned quantity and it should be completed within specified time span.

For any support or Queries, Kindly notify us at any time.

Thanking You

Authorized Signatory,

M. Jesuraj
(M.JESURAJ)
Chief Executive

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



SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN
Kaikkurichi, Pudukkottai - 622 303.

DEPARTMENT OF ELECTRONCS AND COMMUNICATION ENGINEERING

CONSULTANCY PROJECT WORK
REPORT

Precise Water Management in Piped and Micro Irrigation Network

SUBMITTED

To

Mr.M.JESU RAJ

Managing Director

Vasanth Nagar, Karumandapam,

Trichy - 620001

30.04.24

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

About Sri Bharathi Engineering college for women

Sri Bharathi Engineering College for Women, the first college started only for women in Pudukkottai, is named after the famous poet and freedom fighter, Bharathiyar, as he fought for women freedom. This college is started in rural area by Sri Bharathi Educational Trust, in the year 2009, mainly to inculcate quality education for rural women. It is located at about 6 Km from Pudukkottai on the Pudukkottai Aranthangi road, near Kaikkuruchi. The college is approved by AICTE and affiliated to Anna University, Chennai.

Vision

To accomplish the vision of Tamil Poet MAHAKAVI SUBRAMANIYA BHARATHIYAR, Sri Bharathi Engineering College for women obliged "To Empower Women as Intellectual, Valued Human, Ethical Engineer through Outcome Based Education to serve the society in the right path".

Mission

- To create conducive atmosphere for Active Teaching and Learning process by adopting Outcome Based Education to turnout an Intellectual Women Engineers.
- To impart value based Education to become Valued Human and professionally groom as Ethical Engineer in the field of Engineering and Allied Areas.
- To inculcate R&D activities in recent engineering and emerging areas to address the day to day issues faced by the society.
- To practice lifelong learning and empowering women students to serve the society as learned person.



Dr. S.THILAGAVATHI M.E.,Ph.D.,

PRINCIPAL

**SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN**

Kaikkuruchi - 622 303, Pudukkottai Dt.

About ECE department

The Electronics and Communication Engineering department was started in the year 2009 with an intake of 60 students. In ECE department, the faculty members are highly qualified, experienced and specialized in the field of Electronics and Communication engineering. The department has spacious lecture halls and also has well equipped laboratories.

VISSION

“To become the Centre of Excellence in the field of Electronics & Communication Engineering by teaching value and Outcome Based Education to mould as Intellectual Engineers and to develop confidence to lead the society in the right path.”.

MISSION

- M1: Will excel in the field of Electronics and Communication Engineering & allied areas through value and Outcome Based Education.
- M2: Will practice Engineering ethics and contribute R & D activities as ethical engineers to solve the issues faced by the society.
- M3: Will nurture lifelong learning to become as a learned person and empowering women students.



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

Product Development Consultancy Report:

Objective:

(i) Predict Dynamic Crop Water Demands: Utilize advanced AI algorithms to accurately forecast the water requirements of various crops based on factors such as weather conditions, soil moisture levels, and crop types.

(ii) Optimize Water Usage: Integrate real-time soil moisture data and AI-driven predictive analytics to dynamically adjust irrigation schedules, volumes, and durations, ensuring optimal water delivery to each crop and field.

(iii) Enhance Crop Yield: Promote healthier crop growth by providing crops with the right amount of water at the right time, potentially increasing yields and improving crop quality.

(iv) Automate Valve Control Mechanisms: Leverage sensor-driven technology to automate valve control mechanisms, enabling precise and consistent irrigation tailored to the unique needs of each crop and field.

(v) Reduce Water Waste: Implement proactive water management practices to minimize water wastage, conserve water resources, and minimize environmental impact.


(vi) Promote Environmental Sustainability: Contribute to environmental conservation by adopting sustainable water management practices, reducing the ecological footprint of agriculture, and protecting natural resources for future generations.

Requirement: Precise Water Management in Piped and Micro Irrigation Network

Cost Per Piece: Rs.4,300/-

No of units Delivered: 25

Total sanctioned Amount of the project: 1,07,500/-


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

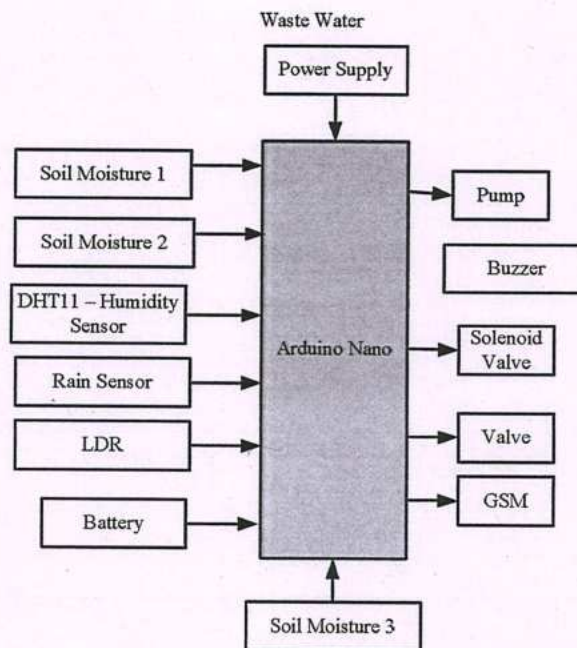
Duration of the Product: 50 days (including network design, development and delivery)

Description:

The "Precise Water Management in Piped and Micro Irrigation Network"

project represents an IoT-based AI-driven solution poised to transform water management in both piped and micro irrigation networks. At its core, the system leverages sophisticated AI algorithms to predict crop water demands with remarkable accuracy. By assimilating real-time soil moisture data, the system dynamically adjusts irrigation, ensuring crops receive optimal hydration for peak growth and yield. A standout feature of this innovative system is its automation capability, facilitated by sensor-driven technology. This automation allows for precise and timely valve control, aligning irrigation with the unique requirements of each crop and field. Such tailored irrigation not only conserves water but also fosters healthier crop growth. The system's seamless integration of AI-driven predictions with on-ground sensor data ensures that water is utilized efficiently, minimizing waste and maximizing agricultural output. As a result, this IoT-based AI-driven solution promises to usher in a new era of sustainable, efficient, and yield-boosting water management practices for modern agriculture.

Block Diagram:



B. Rev

PROJECT INVESTIGATOR

[Signature]

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

[Signature]

HOD / ECE

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

[Signature]

PRINCIPAL

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



SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN

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

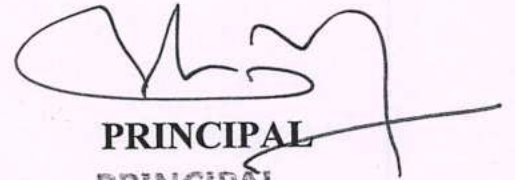
Date : 30/04/2024

UTILIZATION CERTIFICATE

Certified that the amount of rupees Rs.1,07,500 (One lakh seven thousand and five hundred only) was sanctioned by Hi-Tech Electronics, Trichy during the academic year (2023 - 2024), in favour of Department of Electronics and Communication Engineering, Sri Bharathi Engineering College for Women, Kaikkurichi, Pudukkottai has been fully utilized for product development of Precise Water Management in Piped and Micro Irrigation Network. The purpose of amount sanctioned has been fulfilled and delivered as per conditions of grant were satisfied



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.

POWER INTEGRATED SOLUTIONS



INNOVATORS IN ELECTRONIC COMMERCIAL PRODUCTS / PROJECTS / EDUCATION

Registered Office:

NO: 10 A3 RADHAKRISHNA COLONY,
SASTRI ROAD, TENNUR,
TIRUCHIRAPPALLI-620017, TAMIL NADU.
GST: 33AARFP8661MZ1F

Phone : 0431-3500659.

Mobile : 7639385448 | 9566377454.

Web : www.powerintegrated.in.

Mail : contact@powerintegrated.in.

MSME : UDYAM-TN-27-0044175.

Date: 14.9.2023

To
The Principal,
Sri Bharathi Engineering College for women,
Kaikkurichi,
Pudukkottai – 622 303

HOD/EEE
for necessary action
Please
14/9/23

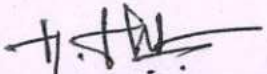
Respected Madam,

We've received the college brochure and are pleased to know about the consultancy work carried out by Electrical and Electronics Engineering Department. Presently, we involved in "Design and Development of Autonomous Drone for Forest Fire and Animal Detection" for our client.

In this regard, we are interested to receive the quotation for the above-mentioned product from your end. This will be highly helpful to deliver the product to our client.


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




Mr. M. Madhan Kumar,
Founder- HRD & ADMIN,
Power Integrated Solutions,
Trichy – 17.



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 : ...3/10/2023..

To

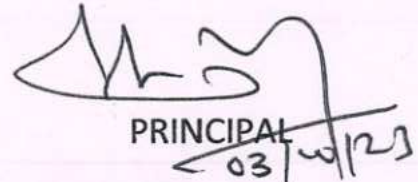
Mr. M. Madhan Kumar,
Founder- HRD & ADMIN
Power Integrated Solutions
Trichy – 17.

Greetings- Sri Bharathi Engineering College for Women- Kaikkurichi,
Pudukkottai

Sub: Quotation for "Design and Development of Autonomous Drone for Forest Fire and Animal Detection" - Reg

With reference to your letter dated 14.09.2023, regarding the Design and Development of Autonomous Drone for Forest Fire and Animal Detection and subsequent in-depth discussions, we hereby submit the official Quotation for your consideration and reply.

Thanking you


PRINCIPAL
03/10/23



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


Enclose: Quotation

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

**Quotation –Design and Development of Autonomous Drone for Forest Fire
and Animal Detection**

Sl. No.	Particulars	Quantity	Rate	Amount in Rs
1.	Design and Development of Autonomous Drone for Forest Fire and Animal Detection	3	38000	1,14,000
			Total Payable	1,14,000
In Words: One Lakh and Fourteen Thousand only				


PROJECT INVESTIGATOR
(Dr. B. Prakash Ayyappa)
AP/EEF.


PRINCIPAL 31-2/23
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
Kaikkurchi - 622 303, Pudukkottai Dt.

POWER INTEGRATED SOLUTIONS



INNOVATORS IN ELECTRONIC COMMERCIAL PRODUCTS / PROJECTS / EDUCATION

Registered Office:

NO: 10 A3 RADHAKRISHNA COLONY,
SASTRI ROAD, TENNUR,
TIRUCHIRAPPALLI-620017, TAMIL NADU.
GST: 33AARFP8661MZ1F

Phone : 0431-3500659.

Mobile : 7639385448 | 9566377454.

Web : www.powerintegrated.in.

Mail : contact@powerintegrated.in.

MSME : UDYAM-TN-27-0044175.

Date: 20.10.2023

To

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

forwarded to
HO/EEE
[Signature]
20/10/23

Respected Madam,

Regarding your quotation dated 3rd October, 2023, we are pleased to inform you that we have accepted your proposal for “Design and Development of Autonomous Drone for Forest Fire and Animal Detection “as outlined in the quotation.

After careful consideration and discussions with our project investment team, we are prepared to allocate the necessary funds for the design and development of over 3 numbers of this system.

We have authorized a total budget of Rs 1,08,000 for the product development associated with the aforementioned quantity. It is essential that this work is completed within the agreed-upon timeframe of 75 days. On any assistance or any inquiries, please do not hesitate to reach out to us at your convenience.

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



[Signature]
Mr. M. Madhan Kumar,
Founder- HRD & ADMIN,
Power Integrated Solutions,
Trichy – 17.



SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN
(Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai)
Kaikkurichi, Pudukkottai - 622 303.

**DEPARTMENT OF ELECTRICAL AND ELECTRONICS
ENGINEERING**

**CONSULTANCY PROJECT WORK
REPORT**

**Design and Development of Autonomous Drone for Forest Fire and Animal
Detection**

SUBMITTED

TO

**Power Integrated Solutions
No10 A3, Radhakrishnan colony,
Sastri Road, Tennur
Tiruchirappalli-620017,
Tamil Nadu**

REPORT DATE: 15.12.2023

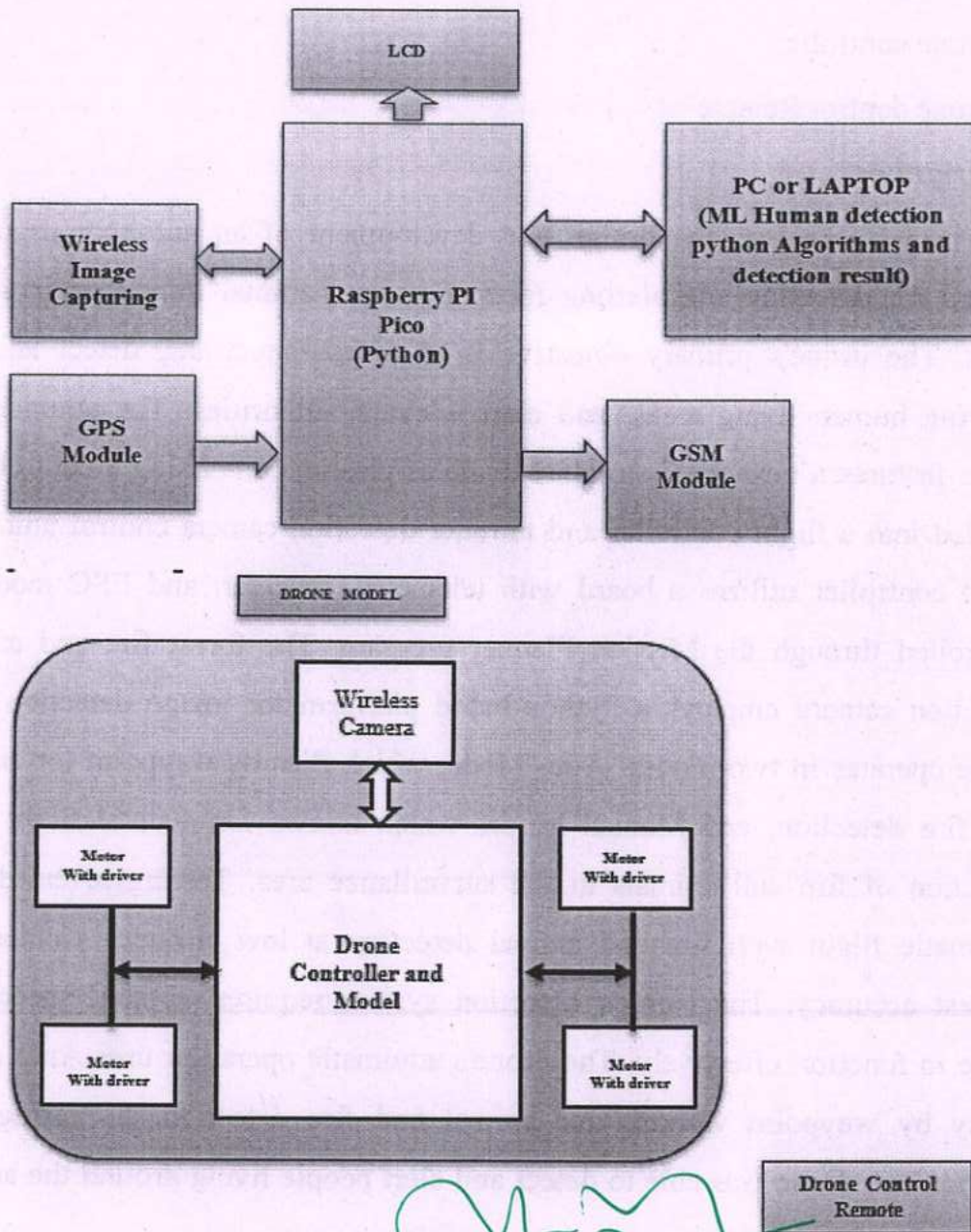

**Dr. S. THILAGAVATHI M.E., Ph.D.,
PRINCIPAL
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
Kaikkurichi - 622 303, Pudukkottai Dt.**

Design and Development of Autonomous Drone for Forest Fire and Animal Detection

Objective:

Design and develop an autonomous drone to detect and alert forest fires and animal intrusions. Utilize a flight controller and camera control unit for efficient navigation and detection. Employ image detection algorithms using Python and automated flight modes for effective monitoring. Enable real-time alerts to relevant authorities for prompt action.

Block Diagram:



[Handwritten Signature]
Dr. S. THILAGAVATHI M.E., Ph.D.,
PRINCIPAL
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
Veitturchi - 622 303 Pudukkottai Dt.


Software Requirement: Thonny IDE

Hardware Requirement:

1. Raspberry Pi Pico
2. GPS Module
3. GSM Module
4. LCD
5. Wireless Camera
6. 4 number of Motor with Driver
7. Drone controller
8. Drone control Remote

Description:

This project involves the design and development of an autonomous drone system for detecting and alerting forest fires and animal intrusions in forest areas. The drone's primary objective is to assess situations, detect animals entering human living areas, and alert relevant authorities. The autonomous drone features a hexagonal structure made of plastic, comprising a control unit divided into a flight controller and intruder detection camera control unit. The flight controller utilizes a board with telemetry, receiver, and ESC modules, controlled through the Mission Planner program. The forest fire and animal detection camera employs a Python-based platform for image detection. The drone operates in two modes: Auto Mode, which flies by waypoint for animal and fire detection, and Manual Mode, which allows for manual flight with detection of fire and animals in the surveillance area. Testing revealed that automatic flight with fire and animal detection at low altitudes yielded the highest accuracy. The camera detection system requires optimal speed and range to function effectively. The drone's automatic operation uses Auto mode to fly by waypoint working for animal and fire detection. In testing, the autonomous drone was able to detect and alert people living around the area in


Dr. S. THILAGAVATHI M.E., Ph.D.
PRINCIPAL
**SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN**

the forest area. Overall, this project demonstrates the potential of autonomous drones in enhancing forest surveillance and wildlife conservation efforts.


Sl. No	Description	Quantity	Cost
1.	Raspberry Pi Pico	01	750
2.	USB GPS Module with external Antenna	01	1800
3.	GSM Module	01	1500
4.	LCD	01	150
5.	Wireless Camera	01	2300
6.	Drone Motor with Driver	04	15000
7.	Drone controller	01	4500
8.	Drone Remote	01	2000
9.	Miscellaneous	-	3000
10.	Design Cost	01	5000
	Total		36000


Cost per Product: Rs. 36000 -/.


Number of Products Delivered: 3

Total Cost of the Project: Rs. 1, 08,000 -/.

Sanctioned Grant: Rs. 1, 08,000-/-.


PROJECT INVESTIGATOR
 (Dr. B. PRAKASH AYYAPPAN)
 AP/ARB.


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.



SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN

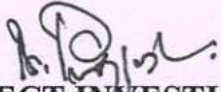
(Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai)


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


Date : 15/12/2023

Utilization certificate

Certified that the amount of rupees Rs.1,08,000 (One lakh and eight thousand only) was sanctioned during the academic year (2023- 2024), in favour of Department of Electrical and Electronics Engineering, Sri Bharati Engineering College for Women, Kaikkurichi, Pudukkottai, has been fully utilized for Product Design and Development of Autonomous Drone for Forest Fire and Animal Detection. The purpose of amount sanctioned has been fulfilled and delivered as per conditions of grant were satisfied.


PROJECT INVESTIGATOR
(Dr. B. PRAKASH AYYAPPAN)
AP/EEE.


PRINCIPAL
15/12/23


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

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



2700/3, Pallavangulam, Vadakarai,
Opp Athikalathu Alangara Maligai, Pudukkottai - 622001
Phone: 9655287856, 9655289556
Mail: pvsolarpowertech@gmail.com
www.pvsolarpowertech.com

Date: 21.2.24

To

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

HOD/EEE
for necessary action
please.
21/2/24

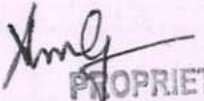
Respected Madam,

With reference to the consultancy brochure we look forward the quotation for Estimation of rating of Solar Photovoltaic Panel for domestic loads and other necessities, for our clients. In this connection the technical assistance may be invited from your institution by submitting as proposal for the above-mentioned work.


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

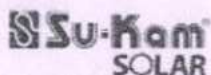


For PV SOLAR POWER TECH


PROPRIETOR

PV SOLAR POWER TECH
2700/3, Pallavangulam Vadakarai,
Opp. Athikalathu Alangara Maaligai,
PUDUKKOTTAI - 622 001.

"The Experts"





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 : 27/2/24.....

To,
PV Solar Power Tech,
2700/3, Pallavankulam,
Vadakarai,
Pudukkottai – 622 001.

Dear Sir,

Greetings from, Sri Bharathi Engineering College for Women!!

With reference to the letter dated 21.2.24, We are in immense pleasure for offering the opportunity to carry out the technical assistance in estimation of rating and numbers of Solar PV Panel required for your clients. Our college faculty from Department of Electrical and Electronics Engineering will carry out the proposed work within stipulated time. We would like to bring to your kind notice that the work may cost around Rs.5000 in total for a single estimation.

We are looking for your kind consideration and reply.

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



2700/3, Pallavangulam, Vadakarai,
Opp Athikalathu Alangara Maligai, Pudukkottai - 622001
Phone: 9655287856, 9655289556
Mail: pvsolarpowertech@gmail.com
www.pvsolarpowertech.com
Date: 05.3.2024

To

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

Forwarded to
1700/EEG
5/3/24

Respected Madam,

We would like to confirm the quotation that we have received from your institution and approve Rs. 4000, as an endowment towards successful submission of the estimation. We insist to start the work once you have received this letter and finish the work within 4 to 7 days.



For PV SOLAR POWER TECH

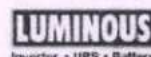
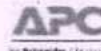
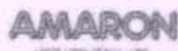
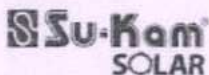
[Signature]
PROPRIETOR

PV SOLAR POWER TECH
2700/3, Pallavangulam Vadakarai,
Opp. Athikalathu Alangara Maaligai,
PUDUKKOTTAI - 622 001.

[Signature]

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

"The Experts"





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

Kaikkurichi, Pudukkottai - 622 303.

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

CONSULTANCY PROJECT WORK

REPORT

**Estimation of Power rating and numbers of Solar PV Panel require for
Installation in domestic appliances**

SUBMITTED

TO

PV Solar Power Tech,

2700/3, Pallavankulam,

Vadakarai,

Pudukkottai – 622 001.

REPORT DATE: 12.03.2024

Dr. S.THILAGAVATHI M.E., Ph.D.,

PRINCIPAL

**SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN**

Kaikkurichi - 622 303, Pudukkottai Dt.

As requested, / Order by PV Solar Power Tech, Pudukkottai dated 5.3.24, the following are the details for your kind perusal.

1. Load estimation

Load	Watts	Hour/Day	Number of loads	Watt-Hr
CFL	20	8	4	640
Fan	60	12	3	2160
LCD TV (55'')	150	7	1	1050
Laptop	40	5	1	200
Total Daily Watt-Hour/day or Wh/day	450			4050

1.a. Load Estimation with power factor of 0.7 approximately.

Load	Watts	Hour/Day	Number of loads	Watt-Hr
CFL	20	8	4	640
Fan	60	12	3	2160
LCD TV (55'')	150	7	1	1050
Laptop	40	5	1	200
Total Daily Watt-Hour/day or Wh/day	643			5786

2. Determining the inverter rating:

The require energy is supplied from a battery bank through an inverter. The total load that would be connected to the inverter is around 643 Watt [$450 \text{ W}/0.7 = 643 \text{ W}$].

Then, the inverters power handling capacity should be around 1000 Watt as available in market.

3. Daily energy supplied to the inverter:

The daily energy consumed by the load is 5786 Wh.

The energy input to the inverter with the efficiency of 94%, is $(5786)/(0.94) = 6155.3 \text{ Wh}$, approximated to 6155 Wh.

4. Deciding the system voltage:

1 Battery of 24V is used to have typical PV system voltage as 24V.


Dr. S. THILAGAVATHI M.E., Ph.D.,
 PRINCIPAL
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN

5. Sizing of batteries:

The required charge capacity = $(6155 \text{ Wh}) / (24 \text{ V}) = 256.45 \text{ Ah}$.

The number of batteries of rating 24V, 200 Ah with Depth of Discharge (DOD) of 70% required is $(256.45 \text{ Ah}) / (100 \times 0.70) = 3.66$, so 3 number of batteries can be preferred.

6. Sizing of PV modules:

The energy supplied at the input of battery terminal with battery efficiency of 90% is, $(5786 \text{ Wh}) / (0.90) = 6428.88 \text{ Wh}$.

The total Ampere hour to be supplied by PV Panel should be, $6428.88 \text{ Wh} / (24 \text{ V}) = 267.87 \text{ Ah}$.

The total amperes from the PV modules, $(267.87 \text{ Ah}) / (8 \text{ h}) = 33.48 \text{ Ampere}$.

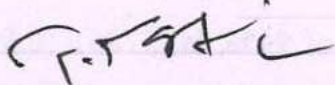
The typical value of voltage and current of 440 W_p module at maximum power point (V_m and I_m) would be about 49 V and 11 A, respectively.

The number of PV modules required is, $33.48 / 11 = 3.04$.

Therefore, 3 PV Panels required as per calculation.

Considering various environmental factors and solar efficiency 3 panels of rating 440 W_p is required to deliver Total Daily Watt- Hour/day of 4050.

Sl. No	Description	Rating	Quantity
1.	Inverter	1000 Watt	01
2.	Battery	24V, 200 Ah	03
3.	Solar PV Panel	440 W_p , 49 V/ 11 A	03


PROJECT INVESTIGATOR

[T. PARTHIBAN, AP/EEE]


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.



SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN


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

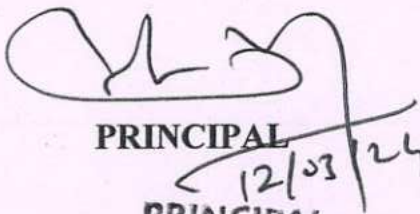
Pudukkottai - Aranthangi Road,
Kaikkurichi, Pudukkottai - 622 303.

Date : 12/3/2024

Utilization certificate

Certified that the amount of rupees Rs.4000 (Four thousand only) was sanctioned by PV Solar Power Tech, Pudukkottai during the academic year (2023 - 2024), in favour of Department of Electrical and Electronics Engineering, Sri Bharathi Engineering College for Women, Kaikkurichi, Pudukkottai has been fully utilized for Estimation of solar PV Panel requirement for your clients. The purpose of amount sanctioned has been fulfilled and delivered as per conditions of grant were satisfied.


PROJECT INVESTIGATOR
[T. PARVATHI BAI, A/EE]


PRINCIPAL
12/03/24
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.



Ponnu
SUPER
BAZAAR

PONNU SUPERMARKET
OPPOSITE TO RAKKI THEATRE AMBATHUR, CHENNAI

Date: 18.09.2023

To

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

Respected Madam,

Greetings from Ponnu Supermarket!

We received your Institution consultancy work brochure. We are in need of the project "Shopping Card System". Please send the quotation details about the consultancy project mentioned here.

Thanks and Regards,

M. Ponnambalam,
Managing Director,
Ponnu supermarket.



Dr. S. THILAGAVATHI M.E., Ph.D.,
PRINCIPAL
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
Kaikkuruchi - 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 : 25/9/2023

To

Mr.M. Ponnambalam,
Managing Director,
Ponnu supermarket.

Respected Sir,

Sub: Submission of consultancy work quotation – Reg.

Greetings from Sri Bharathi Engineering College for Women!

With reference to your letter dated 18.09.2023, our college have prepared and wish to send the quotation to carry out the consultancy project of supermarket. We would like to bring to your kind notice that, the project “Shopping Card System” may cost around Rs.33,000/- and the work plan and product design components with price details are listed for further processing.

We assure that we will provide the required technical support from our end, for the successful completion of the project. We are looking forward your kind consideration about our consultancy project work proposal and we request you to please do not hesitate to contact us for any queries about the design and working of project.

Thanking You,

With warm regards,

PRINCIPAL

PRINCIPAL 25/9/23

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

Enclosures:

1. Work Plan
2. Financial details

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


1. WORK PLAN

S.NO	DESCRIPTION	TIME DURATION IN WEEKS
1	Customer requirements collection	1 week
2	Content Creation	1 week
3	Graphic design	1 week
4	Implementation	4 weeks
5	Product Testing and Delivery	1 week
Total duration		8 weeks

2. FINANCIAL DETAILS

Design and Development of the Shopping Card System

Sl. No.	Particulars	Quantity	Rate	Amount in Rs
1.	Shopping Card System	2	33,000	66,000
			Total Payable	66,000
In Words: Sixty Six Thousand only				


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



Ponnu
SUPER
BAZAR

PONNU SUPERMARKET
OPPOSITETO RAKKI THEATREMBATHUR,CHENNAI

Date: 04.10.2023

To

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

Respected Madam,

With reference to your proposal submitted dated on 25.09.2023.

We are satisfied with your positive response. The project “Shopping Card System” is accepted. As per our discussion, the consultancy amount sanctioned from our end is Rs.60,000/- and the work should be completed within the stipulated time period.

Thanks and Regards,

M. Ponnambalam,
Managing Director,
Ponnu supermarket.



Dr. S. THILAGAVATHI M.E., Ph.D.,
PRINCIPAL
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
Kaikkuruchi - 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 : 30/10/2023

To

M. Ponnambalam,
Managing Director,
Ponnu supermarket.

Respected Sir,

Sub: Completion of Consultancy Project – Reg.

Ref: Letter dated 04.10.2023

Greetings from Sri Bharathi Engineering College for Women!

We are pleased to inform you that we have successfully completed the project "Shopping Card System". Herewith, we are sending the project work document. Looking forward to your response.

With warm regards,

PRINCIPAL

PRINCIPAL 30/10/23

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

Enclosure:

1. Project work Document

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-25)
Kaikkurichi, Pudukkottai, Tamil Nadu – 622 303, India


CONSULTANCY PROJECT WORK REPORT

SHOPPING CARD SYSTEM

SUBMITTED TO

M. Ponnambalam,
Managing Director,
Ponnu supermarket.

DELIVERY DATE: 30.10.2023


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

CONSULTANCY PROJECT REPORT

OBJECTIVE

The Eye Blink RFID shopping card system is designed to enhance the shopping experience by integrating RFID technology into traditional shopping cards. The primary objective of Eye Blink is to streamline the shopping process for both customers and retailers while providing additional benefits such as real-time inventory management and personalized marketing.

SYSTEM REQUIREMENTS

SOFTWARE REQUIREMENTS:

Language : Embedded C

Arduino : compiler tool

Proteus : simulation tool

HARDWARE REQUIREMENTS:

Arduino Microcontroller

IOT module

Power supply

RFID Tag

RFID Reader

LCD Display

DESCRIPTION

The Eye Blink RFID Shopping Card System represents a pioneering fusion of cutting-edge technologies aimed at redefining the retail experience. By integrating eye blink recognition technology with Radio-Frequency Identification (RFID) technology, this system offers a novel approach to streamline the shopping process, enhance security, and deliver personalized services to consumers. Traditional methods of authentication and transaction processing in retail environments often involve cumbersome processes such as entering PINs or signing receipts, leading to inefficiencies and potential security vulnerabilities.



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

Moreover, the reliance on physical cash or credit cards can present challenges in terms of convenience and security. Recognizing these limitations, the Eye Blink RFID Shopping Card System seeks to address these issues by introducing a seamless and secure authentication method based on biometric technology. In addition to biometric authentication, the Eye Blink RFID Shopping Card System leverages RFID technology to automate the identification and tracking of products within the retail environment. Each product is equipped with an RFID tag containing relevant information, including price, description, and inventory status.

As customers navigate the store and select items for purchase, the RFID system automatically updates their virtual shopping carts, providing real-time information on selected items and their respective prices. By harnessing the power of RFID technology and computer vision, we're redefining the shopping experience from the moment customers enter the store to the point of checkout. With hands-free navigation, personalized recommendations, automatic checkout, seamless payment integration, and real-time inventory management, this innovative system not only streamlines operations for retailers but also enhances the shopping journey for consumers. It's a fusion of cutting-edge technology and consumer-centric design, ushering in a new era of retail excellence.

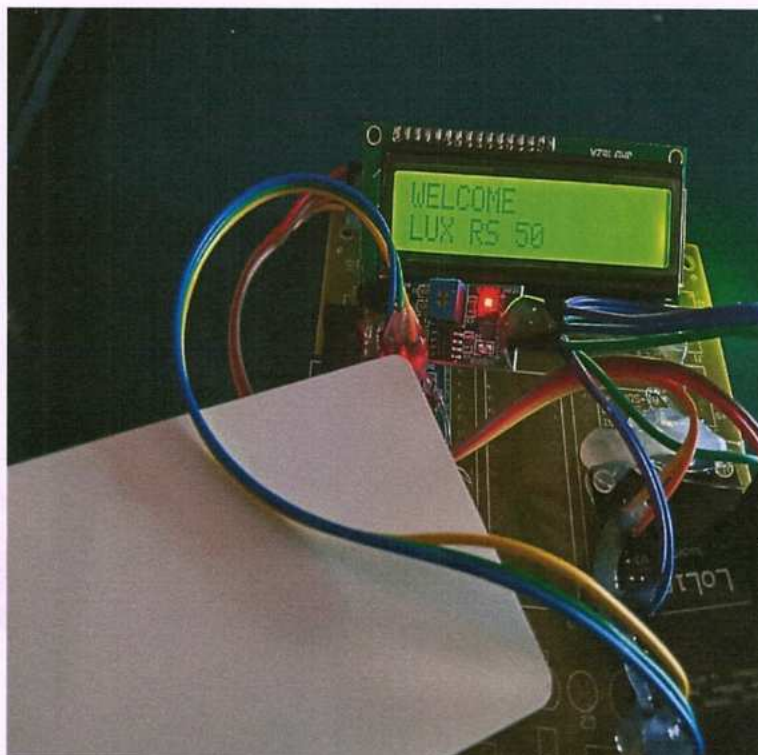
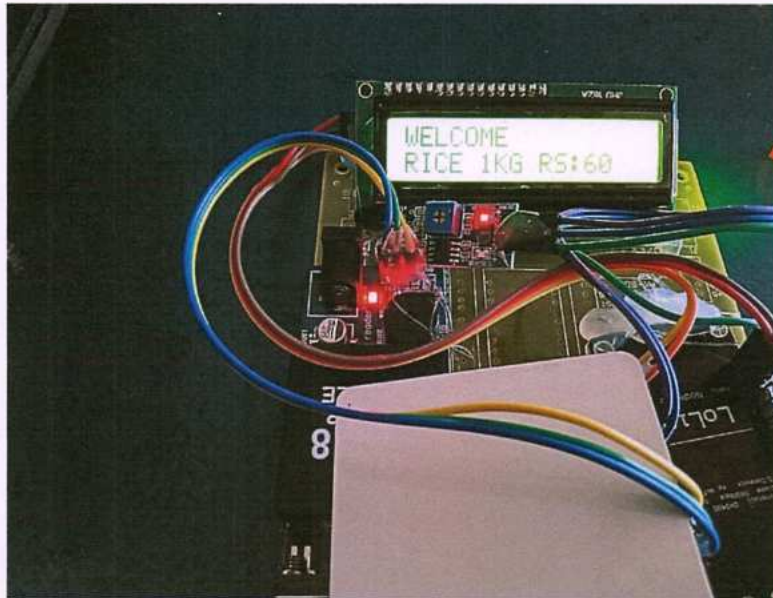
TOTAL SANCTIONED AMOUNT: Rs. 60,000/-

DURATION OF THE PROJECT: 8 WEEKS

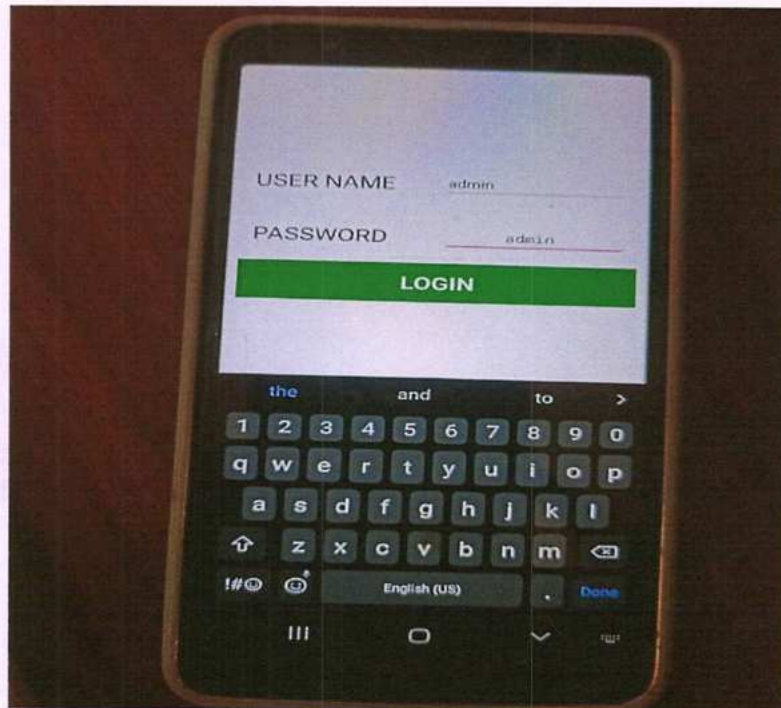
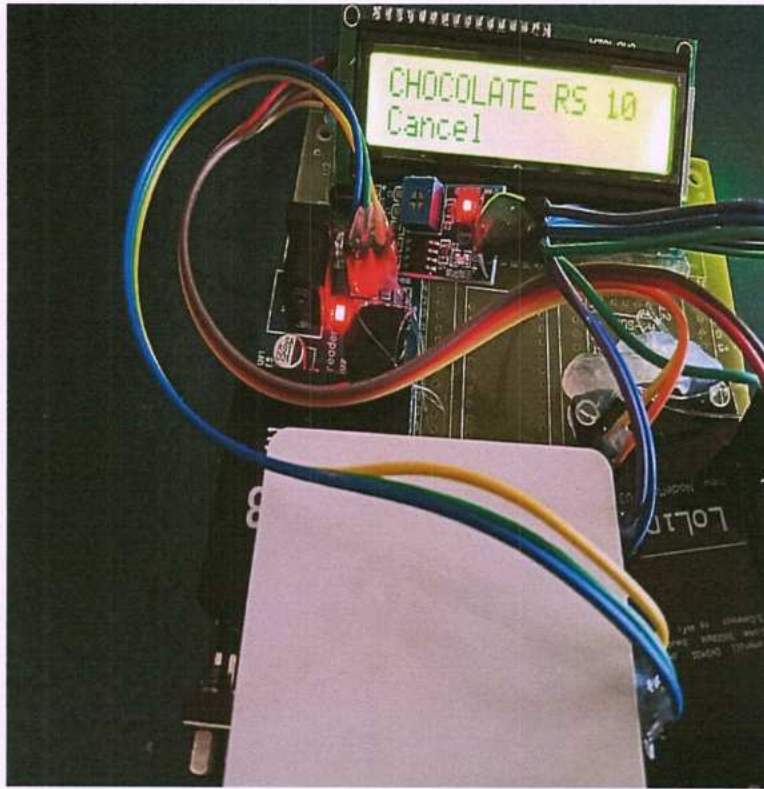


Dr. S. THILAGAVATHI M.E., Ph.D.,
PRINCIPAL
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
Kaikkurchi - 622 303, Pudukkottai Dt.

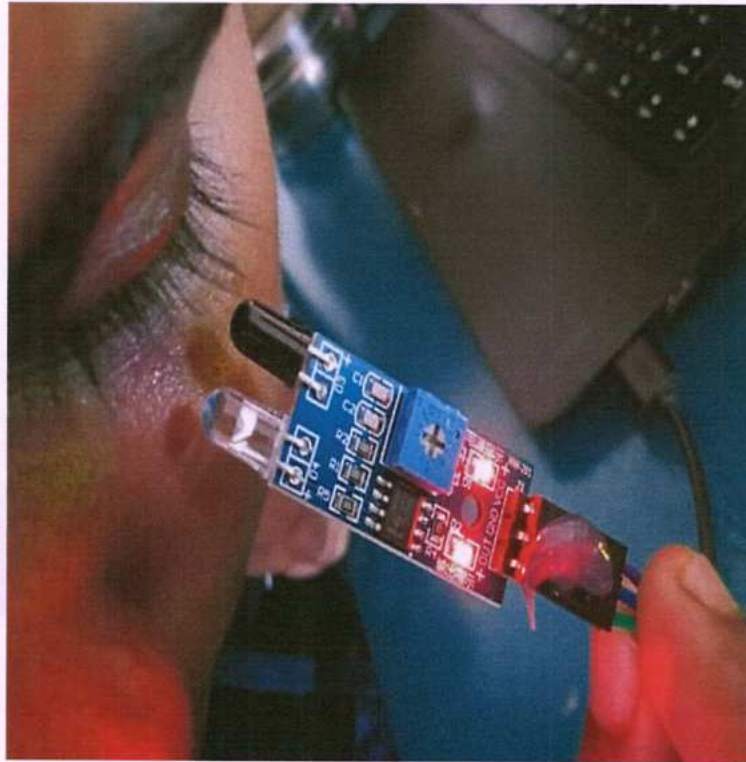
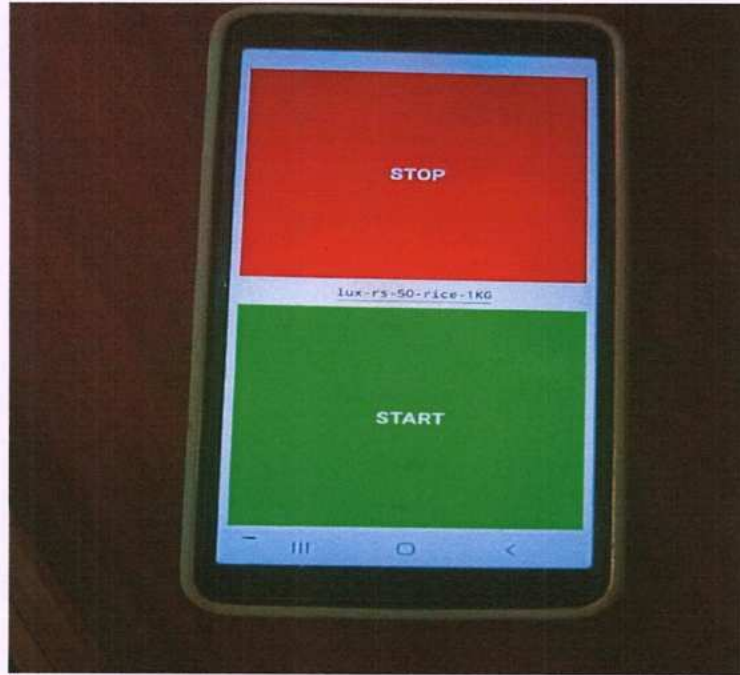
SAMPLE SCREENSHOTS:



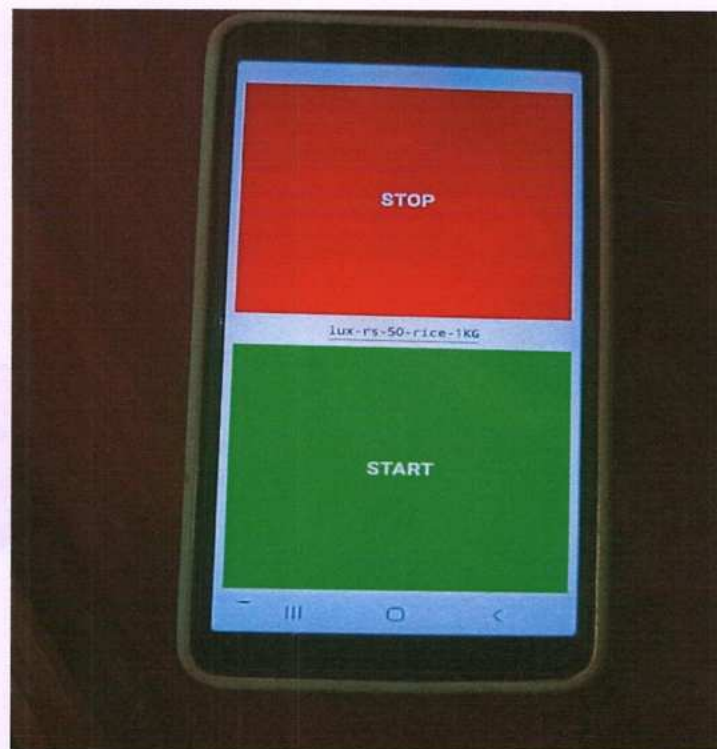
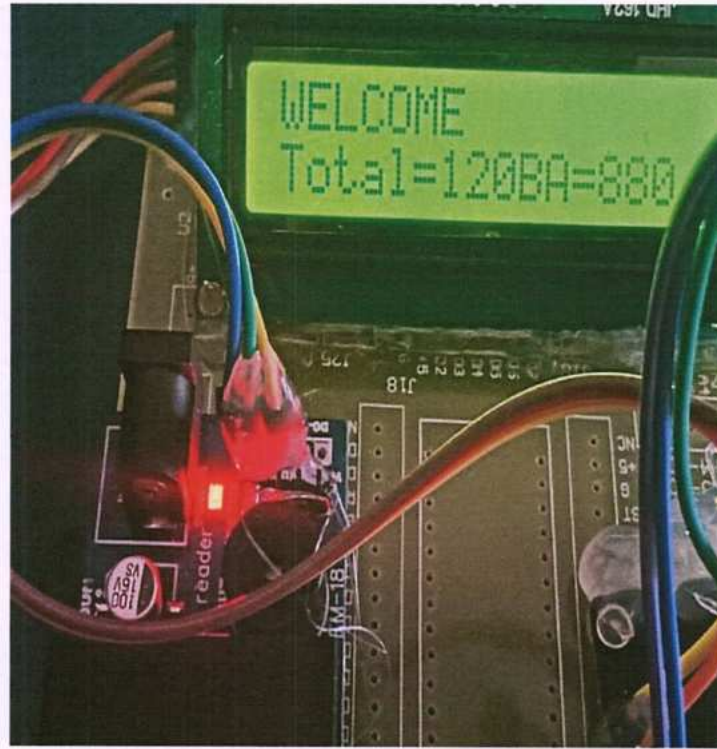
Dr. S. THILAGAVATHI M.E., Ph.D.,
PRINCIPAL
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
Kaikkurchi - 622 303, Pudukkottai Dt.




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




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



Dr. S. THILAGAVATHI M.E., Ph.D.
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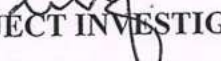
SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN


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

Date : 6/11/2023...

UTILIZATION CERTIFICATE

Certified that amount of Rs.60,000/- (Rupees Sixty thousand only) sanctioned during the year of 2023 in favour of department of Computer Science and Engineering – Sri Bharathi Engineering College for Women received from Ponnusupermarket has been utilized for the project consultancy work titled “Shopping Card System”. The purpose of which it was sanctioned has been duly fulfilled and delivered as per conditions of grant were satisfied.


PROJECT INVESTIGATOR
[R. MEENA, AP/CSE]


PRINCIPAL
PRINCIPAL (u/23)
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.



MECK TECK RESEARCH FOUNDATION

(Registered Under Ministry of Micro, Small and Medium Enterprises UDYAM-TN-17-0015761)

Date: 19.03.2024

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

Dear Sir/Madam,

Greetings from **Meck Teck Research Foundation!**

We have visited a brochure of your institution consultancy work. In this regard, we would like to discuss the possibility of developing Garbage Monitoring System with your project team. We are interested to know the related expenditure.

Thanks and Regards,

Dr.M.Meiganamoorthy,
Founder and CEO,
Meck Teck Research Foundation.

Dr. M. MEIGNANAMOORTHY, M.E., Ph.D.,
FOUNDER & CEO
Meck Teck Research Foundation
6/9, Kamarajapuram 17-th Street,
1-st Cross, PUDUKKOTTAI - 622 001,
Tamil Nadu, India.



Dr. S. THILAGAVATHI M.E., Ph.D.,
PRINCIPAL
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
Kaikkuruchi - 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 : 26.03.2024

To

Dr.M.Meiganamoorthy,
Founder and CEO,
Meck Teck Research Foundation,
9RP8+FPV, N Main St, Wadair Santha, Brindavan, Pudukkottai,
Tamil Nadu 622001.

Respected Sir/Madam,

Sub: Submission of project consultancy work quotation – Reg.
Ref: Letter dated 19.03.2024

Greetings from Sri Bharathi Engineering College for Women!

We accept your company's project proposal with great pleasure. To follow up on your letter, the CSE Department has produced and is sending a quote to complete the consulting assignment for your company. The project "Garbage Monitoring System" may cost around Rs. 25,000/ the quotation detail is presented below for future processing.

FINANCIAL DETAILS:

S.NO	DESCRIPTION	COST IN RS
1.	Design Phase	4,000/-
2.	Content Creation	3,000/-
3.	Development Phase	8,000/-
4.	Product Testing and Delivery	5,000/-
5.	Training and Documentation	5,000/-
Total		25,000/-
Quantity		02
TOTAL AMOUNT		50,000/-

Thanking You,

With warm regards,


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

Ph: 04322 - 242768 Mobile: 99422 28029, 97509 28029
website : www.sbec.edu.in e-mail : sribharathienggcollege@gmail.com



MECK TECK RESEARCH FOUNDATION

(Registered Under Ministry of Micro, Small and Medium Enterprises UDYAM-TN-17-0015761)

Date: 03.04.2024


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

Dear Sir/Madam,

With reference the letter dated on 26.03.2024.

We are pleased to inform you that we have accepted the total budget of Rs. 44,000/- for the Garbage Monitoring System. It is essential that the work is completed within the short timeframe.

Thanks and Regards,


Dr.M.Meiganamoorthy,
Founder and CEO,
Meck Teck Research Foundation.

Dr. M. MEIGNANAMOORTHY, M.E., Ph.D.,
FOUNDER & CEO
Meck Teck Research Foundation
6/9, Kamarajapuram 17-th Street,
1-st Cross, PUDUKKOTTAI - 622 001,
Tamil Nadu, India.




Dr. S. THILAGAVATHI M.E., Ph.D.,
PRINCIPAL
**SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN**



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 : 30.04.2024

To

Dr.M.Meiganamoorthy,
Founder and CEO,
Meck Teck Research Foundation,
9RP8+FPV, N Main St, Wadair Santha,
Brindavan, Pudukkottai,
Tamil Nadu 622001.

Respected Sir/Madam,

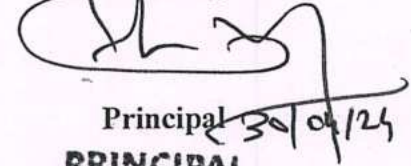
Sub: Completion of Consultancy Project – Reg.
Ref: Letter dated 03.04.2024

Greetings from Sri Bharathi Engineering College for Women!

We are glad to let you know that the project “Garbage monitoring System” has been successfully finished. We are submitting the project workdocument along with this.

Looking forward your response,

With warm regards,



Principal 30/04/24

PRINCIPAL

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

Enclosure:

1. Project work Document



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



SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN

Kaikkurichi, Pudukkottai, Tamil Nadu – 622 303, India
(Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai-25)

CONSULTANCY PROJECT WORK REPORT

GARBAGE MONITORING SYSTEM

SUBMITTED TO

Dr.M.Meiganamoorthy,

Founder and CEO,

Meck Teck Research Foundation,

9RP8+FPV, N Main St, Wadair Santha,

Brindavan, Pudukkottai,

Tamil Nadu 622001.

DELIVERY DATE: 30.04.2024

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

CONSULTANCY PROJECT REPORT

OBJECTIVE:

The Smart Garbage Monitoring and Disposal Support System (SGMDSS) is an innovative IOT-based solution designed to enhance garbage management. It automates waste monitoring and disposal by employing sensors in garbage bins. The system notifies cleaning personnel via an android mobile app about the garbage level. Additionally, real-time data is stored in the cloud and accessible through a webpage, ensuring efficient and timely waste disposal. This technology aims to improve cleanliness in metros, cities, and villages while minimizing manual intervention in the traditional garbage collection process.

SYSTEM REQUIREMENTS

HARDWARE REQUIREMENTS

System : IOT kit

Main Components: Ardiuno,Ultrasonic sensor

Power Supply: 12 Volt

SOFTWARE REQUIREMENTS

Languages: Programming in C

Front End: Blynk app

Backend: Blynk Cloud

DESCRIPTION:

A microcontroller is a compact integrated circuit designed to perform specific tasks within embedded systems. It consists of various functional blocks that work together to execute instructions and interact with external components. The ESP8266 is not just a microcontroller; it's a versatile and widely used Wi-Fi module that integrates a powerful microcontroller with built-in Wi-Fi capability.

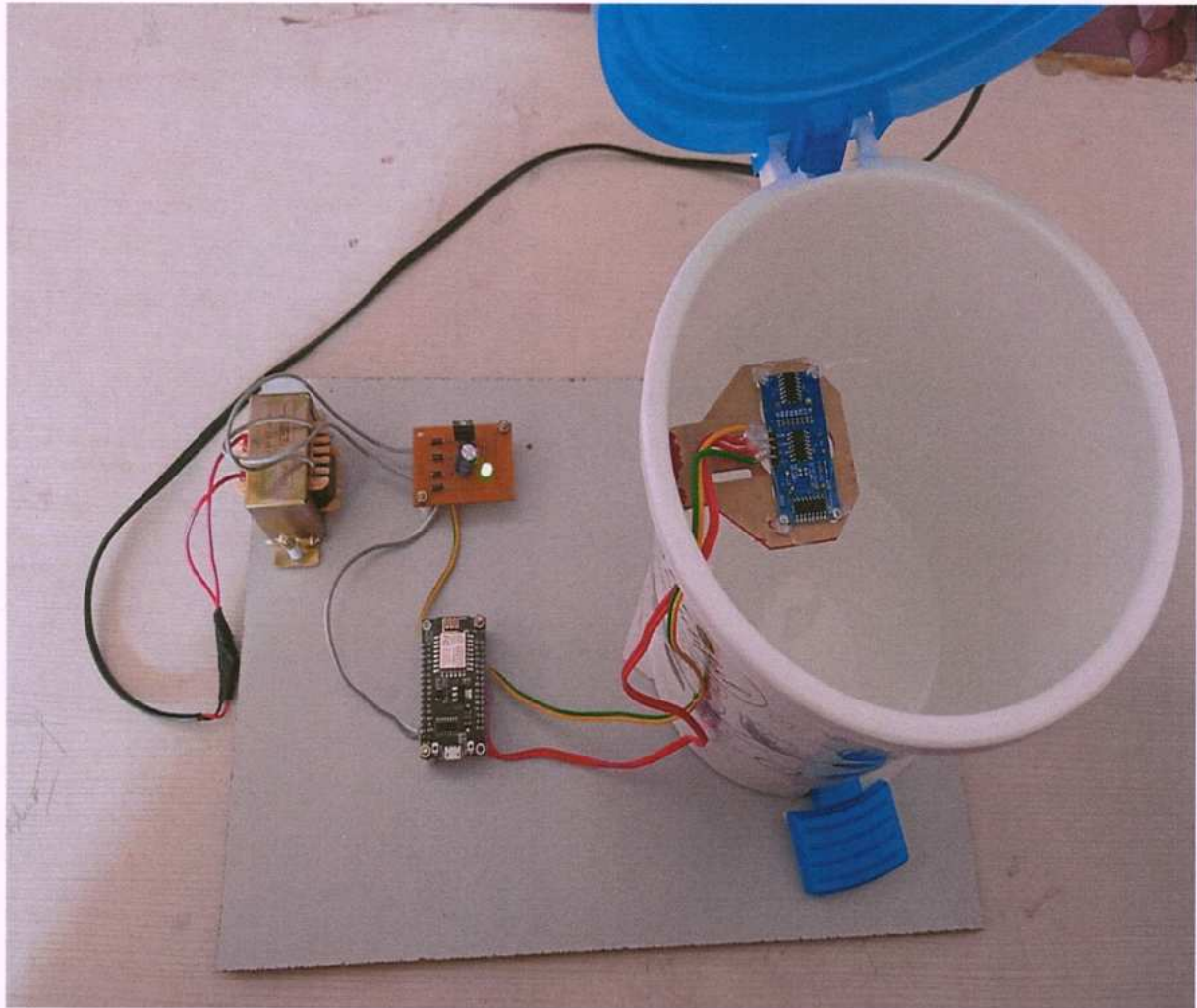
The system utilizes sensors like ultrasonic sensors to gauge the level of garbage in the bins. Data is extracted from these sensors to ascertain the current fill level of each garbage bin. The microcontroller gathers data from different sensors and modules connected to it, such as the ultrasonic sensor and GSM module. This data includes garbage level measurements, communication status, and system health information.



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

SAMPLE SCREENSHOT

HARDWARE SETUP WITH BIN



Dr. S.THILAGAVATHI M.E., Ph.D.,
PRINCIPAL
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
Kaikkurchi - 522 303, Pudukkottai Dt.

BLYNK APP




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

BLYNK CLoUD





Templates

Search Templates



smart dustpin
1 Device

USER INFORMATION

 Sri Bharathi Engineering College Fo... ...
 1  1  0

Information Devices Users Locations

NAME
Sri Bharathi Engineering College Fo... USERS
1

DESCRIPTION
garbage collection

ADDRESS
Trichy - Pudukkottai - Aranthangi -
Mimisal Road, Alangudi, Tamil Nadu,
622303, India

CITY
Alangudi

COUNTRY
India

HIERARCHY
→ Sri Bharathi Engineering College Fo...



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

ONLINE OR OFFLINE



Sri Bharathi Engineering College Fo...

1 1 0



Information Devices Users Locations

Name	Status	Model	Last Updated
SBEW 101 dustbin	Offline		2:20 PM Yesterday

USERS INFO



Sri Bharathi Engineering College Fo...

1 1 0



Information Devices Users Locations

1 User

Name	Status	Role	Last Login
Nandhini (you)	Active	Admin	9:01 PM Today

LOCATION



Sri Bharathi Engineering College Fo...

1 1 0



Information Devices Users Locations

Location Name	Address	Users	Devices	Owner
SBEW	Kaikurichi, Alangudi, Pudukkottai, Tamil Nad...	No users	No devices	pandyanppandyan@gmail.c...

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



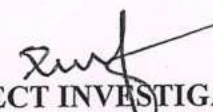
SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN

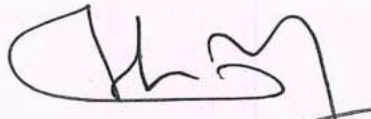
(Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai)
Pudukkottai - Aranthangi Road,
Kaikkurichi, Pudukkottai - 622 303.

Date : 07.05.2024

UTILIZATION CERTIFICATE

Certified that amount of Rs.44,000(Rupees Forty Four Thousand only) sanctioned during the year of 2024 in favour of department of Computer Science and Engineering – Sri Bharathi Engineering College for Women received from Meck Teck Research Foundation has been utilized for the project consultancy work titled “Garbage Monitoring System”. The purpose of which it was sanctioned has been duly fulfilled and delivered as per conditions of grant were satisfied.


PROJECT INVESTIGATOR
[R. MEENA IAP/CE]


PRINCIPAL
07/05/24
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.



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

+91 90039 99378

Kamaal Construction

Good quality Good Service

DATE: 19.06.2023

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


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
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 :

DATE:21.06.2023

To

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

Respected Sir,

Sub : Submission of consultancy work quotation - Reg.

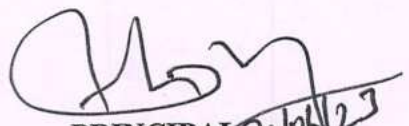
Greetings from Sri Bharathi Engineering college for women !!!

With reference to your letter dated 19.06.2023, 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 contact us.

Thanking you


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


PRINCIPAL 21/06/23
PRINCIPAL
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
KAIKKURICHI - 622 303.
PUDUKKOTTAI DISTRICT



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

+91 90039 99378

Kamaal Construction

Good quality Good Service

DATE:23.06.2023

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 21.06.2023 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


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


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



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

Kamaal Construction

No: 24/4, Atthipa Complex

Barathidhasan street

Aranthangi – 614 616

REPORT DATE : 04.01.2024


Dr. S.THILAGAVATHI M.E., Ph.D.,
PRINCIPAL
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
Kaikkurichi - 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 ³ |
| 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 ³ |

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

3. Water content


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

Max. Water content for
 20 mm = 186 liters (for 25 to 50 mm)
 Then with superplasticizers = 186×0.71
 = 132 liters

4. Cement and Fly ash content

Water – cement ratio = 0.40
 Cement content = $\frac{132}{0.40}$
 = 330 kg/m³
 Min. cement content serve = 320 kg/m³
 $350 \text{ kg/m}^3 > 320 \text{ kg/m}^3$
 Cementitious material content = 330×1.10
 = 363 kg/m³
 Water content = 132 liters
 Water cement ratio = $\frac{132}{363}$
 = 0.363

Fly ash @ 30% of

Total cementitious content = $363 \times \frac{30}{100}$
 = 108.9 kg/m³

Cement (OPC) = 363 – 108.9
 = 254.1 kg/m³

Saving of cement while using

Fly ash = 330 – 254.1
 = 75 kg/m³


 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
Kalkkurchi - 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 \times

$$1000$$

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

$$= 1053 \text{ kg}$$

viii. Mass of fine aggregate

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

gravity of fine aggregate $\times 1000$

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

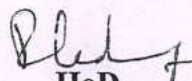
$$= 787 \text{ kg}$$



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

MIX PROPORTIONS

Cement	= 254 kg/m ³
Flyash	= 108 kg/m ³
Water	= 132 kg/m ³
Fine aggregate	= 787 kg/m ³
Coarse aggregate	= 1053 kg/m ³
Water-cement ratio	= 0.363


TEST CONDUCTED


HoD


PRINCIPAL
PRINCIPAL 04/06/24
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
KAIKKURICHI - 622 303.
PUDUKKOTTAI DISTRICT


D. 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 :

Date:05.07.2023

UTILISATION CERTIFICATE

Certified that an amount of Rs.15,000/- (FIFTEEN THOUSANDS ONLY) sanctioned during the year of 2023 in favour of civil engineering received from kamaal constructions has been utilized for the project consultancy work titled "Concrete Mix Design M30". The purpose of which it was sanctioned has been duly fulfilled and delivered as per conditions of grant were satisfied.

PROJECT INVESTIGATOR

PRINCIPAL

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



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

+91 90039 99378

Kamaal Construction

Good quality Good Service

DATE: 13.12.2023

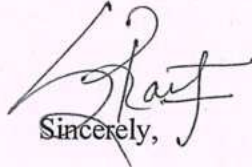
To

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

Dear Sir/Madam,

Subject: Enquiry Regarding Consultancy Work Brochure – Concrete Mix Design 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,

Kamaal Constructions,

Aranthangi.

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
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 :

DATE: 15.12.2023

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 13.12.2023, we would like to inform you that the estimated cost for the Concrete Mix Design M30 is approximately Rs.15,000/-.

If you have any questions or require additional information regarding the cost estimation or any other aspect of the project, please contact us.

Thanking you

Dr. S. THILAGAVATHI M.E., Ph.D.,

PRINCIPAL

SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN

Kaikkurichi - 622 303, Pudukkottai Dt.

PRINCIPAL

15/12/23



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

+91 90039 99378

Kamaal Construction

Good quality Good Service

DATE: 18.12.2023

To

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

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. 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.

Sincerely,
KAMAAL CONSTRUCTION
No.24/4, Atthipa Complex,
Barathidhasan Street,
Aranthangi - 614616
Cell : 900399378

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

Kamaal Construction

No: 24/4, Atthipa Complex

Barathidhasan street

Aranthangi – 614 616

REPORT DATE : 03.07.2023

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

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 ³ |
| 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 ³ |

1. Target strength for mix proportioning (M30 grade)

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

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

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

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 O.K



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

3. Water content

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

4. Cement and Silica fume content

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

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 m^3
- ii. Volume of cement

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


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

iii. Volume of water

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

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

$$\begin{aligned} &= e \times \text{Volume of coarse aggregate} \times \\ &\quad \text{Specific gravity of coarse aggregate} \\ &\quad \times 1000 \\ &= 0.743 \times 0.56 \times 2.7 \times 1000 \\ &= 1123.4 \text{ kg} \end{aligned}$$


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

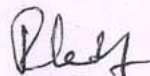
vii. Mass of fine aggregate

$$\begin{aligned} &= e \times \text{volume of fine aggregate} \times \text{Specific} \\ &\text{gravity of fine aggregate} \times 1000 \\ &= 0.743 \times 0.44 \times 2.62 \times 1000 \\ &= 856.5 \text{ kg} \end{aligned}$$

MIX PROPORTIONS

Cement	= 300 kg/m ³
Silica fume	= 8 kg/m ³
Water	= 160 kg/m ³
Fine aggregate	= 1123.4 kg/m ³
Coarse aggregate	= 856.5 kg/m ³
Water-cement ratio	= 0.5


TEST CONDUCTED


HoD


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, Pudukkotta District.



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 :

Date:05.01.2024

UTILISATION CERTIFICATE

Certified that an amount of **Rs.15,000/- (FIFTEEN THOUSANDS ONLY)** sanctioned during the year of **2024** in favour of civil engineering received from **Kamaal Construction** has been utilized for the project consultancy work titled "**Concrete Mix Design M30**". The purpose of which it was sanctioned has been duly fulfilled and delivered as per conditions of grant were satisfied.


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.



TRM CONSTRUCTION

Green Nest Homes

Er. T.MURUGANANDHAM .BE

DATE: 19.01.2024

To

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

Dear Sir/Madam,

We would like to get the quotation for the Design of a Residential Building with a plinth area of 4200sq.ft for duplex home with G+1 floors as per the attached building plan. The design should include complete and accurate reinforcement detailing of all sections with drawings for each floor separately based on our requirements. Any other input or specific requirements or documents needed from our end may be provided for the completion of the design.

Thanking you


T. MURUGANANDHAM, D.C.E.,
REGISTERED ENGINEER (G-III)
Registration No: 261-09/2020
T.R.M. CONSTRUCTIONS
A.I.R. Complex, Melavaladi, Trichy-621 218
Cell: +91 99521 56613


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

A.I.R.COMPLEX, J.S GARDEN MELAVALADI POST,
LALGUDI MAIN ROAD, TIRUCHIRAPPALLI DISTRICT -621218.



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 :

DATE:22.01.2024

To

TRM Construction,
A.I.R Complex,
Lalkudi Main Road,
Trichy-621218

Respected Sir,

Sub: Submission of quotation for consultancy work "Design of Residential Building" – Reg.

Greetings from Sri Bharathi Engineering College for Women.

On behalf of our Organization, I would like to extend our appreciation to you for showing interest in our organization regarding consultancy project work. In continuation with your reference letter dated 19.01.2024, we would like to quote the charges for the consultancy work 'Design of a residential building' as Rs.40,000/- We assure to furnish all the details within the stipulated time and as per your requirements.

Thanking you


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


PRINCIPAL
PRINCIPAL 22/01/24
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
KAIKKURICHI - 622 303.
PUDUKKOTTAI DISTRICT



TRM CONSTRUCTION

Green Nest Homes

Er. T.MURUGANANDHAM .BE

DATE: 24.01.2024

To

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

Dear Sir/Madam,

With reference to your project work quotation letter 19.01.2024, We would like to approve Rs.37,800/- as an endowment towards successful submission of our requirements mentioned in the letter dated 10.10.2022 and the work may be completed within 30 days from the date of this letter. Please contact us if you have any clarifications about the sanctioned endowment work.

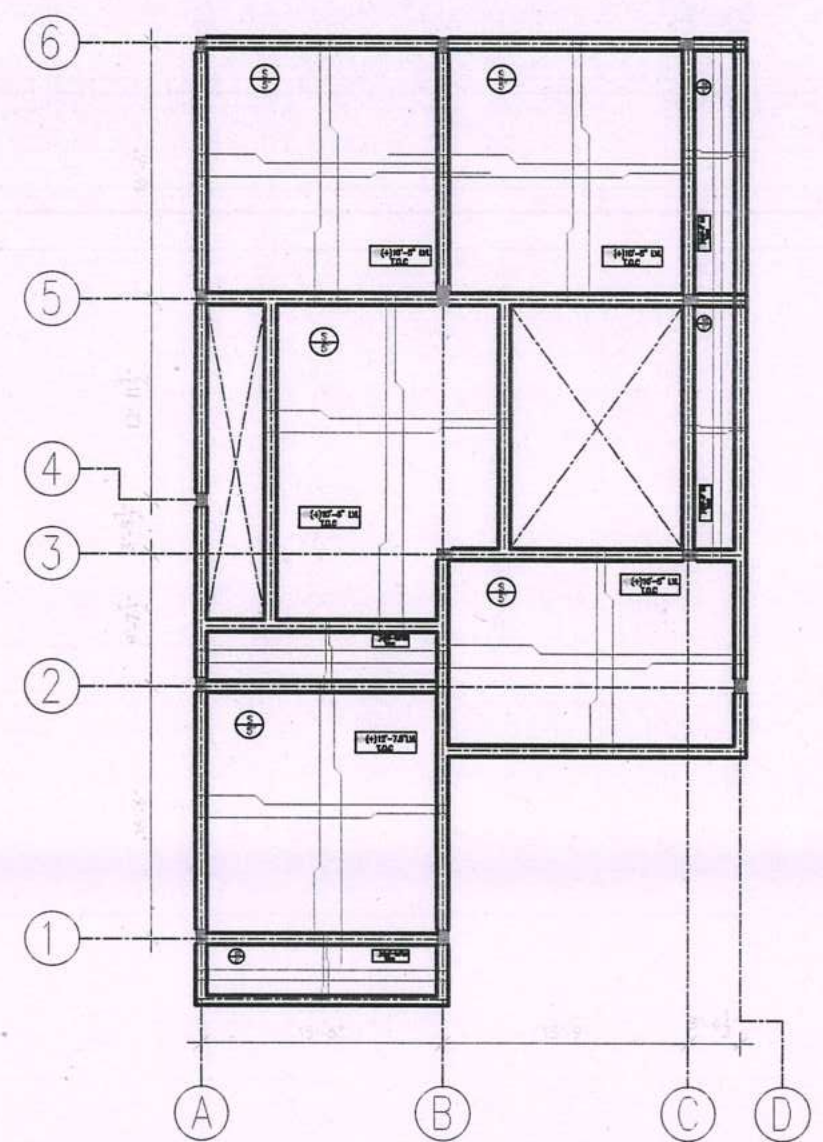
Thanking you


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


T. MURUGANANDHAM, D.C.E.,
REGISTERED ENGINEER (G-III)
Registration No: 261-09/2020
T.R.M. CONSTRUCTIONS
A.I.R. Complex, Melavaladi, Trichy-621 218
Cell: +91 99521 56613

A.I.R.COMPLEX, J.S GARDEN MELAVALADI POST,
LALGUDI MAIN ROAD, TIRUCHIRAPPALLI DISTRICT -621218.

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GROUND FLOOR SLAB LAYOUT @
E.L. (+) 10'-0" T.O.S.
 (ALL GRID LINES GIVEN ARE CENTER LINE OF BRICK WALL)

SCHEDULE OF SLAB

NAME	SLAB TYPE	REINFORCEMENT
S	TWOWAY SLAB	# 10 @ 7" C/C - BOTH WAYS
S1	ONEWAY SLAB	# 10 @ 7" C/C - BOTH WAYS

ISSUED FOR CONSTRUCTION

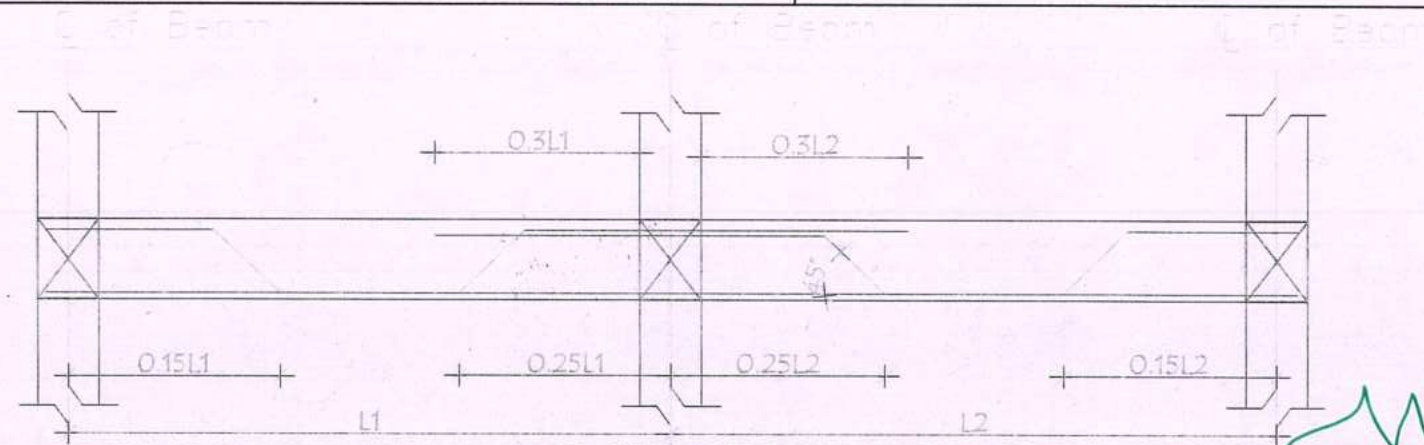
ALL LEVELS ARE FOLLOWED FROM F.F.L

ALL DIMENSIONS ARE IN FEET AND INCHES

CLEAR COVER = SLAB - 3/4"

GRADE OF CONCRETE - M20

GRADE OF STEEL - Fe 500



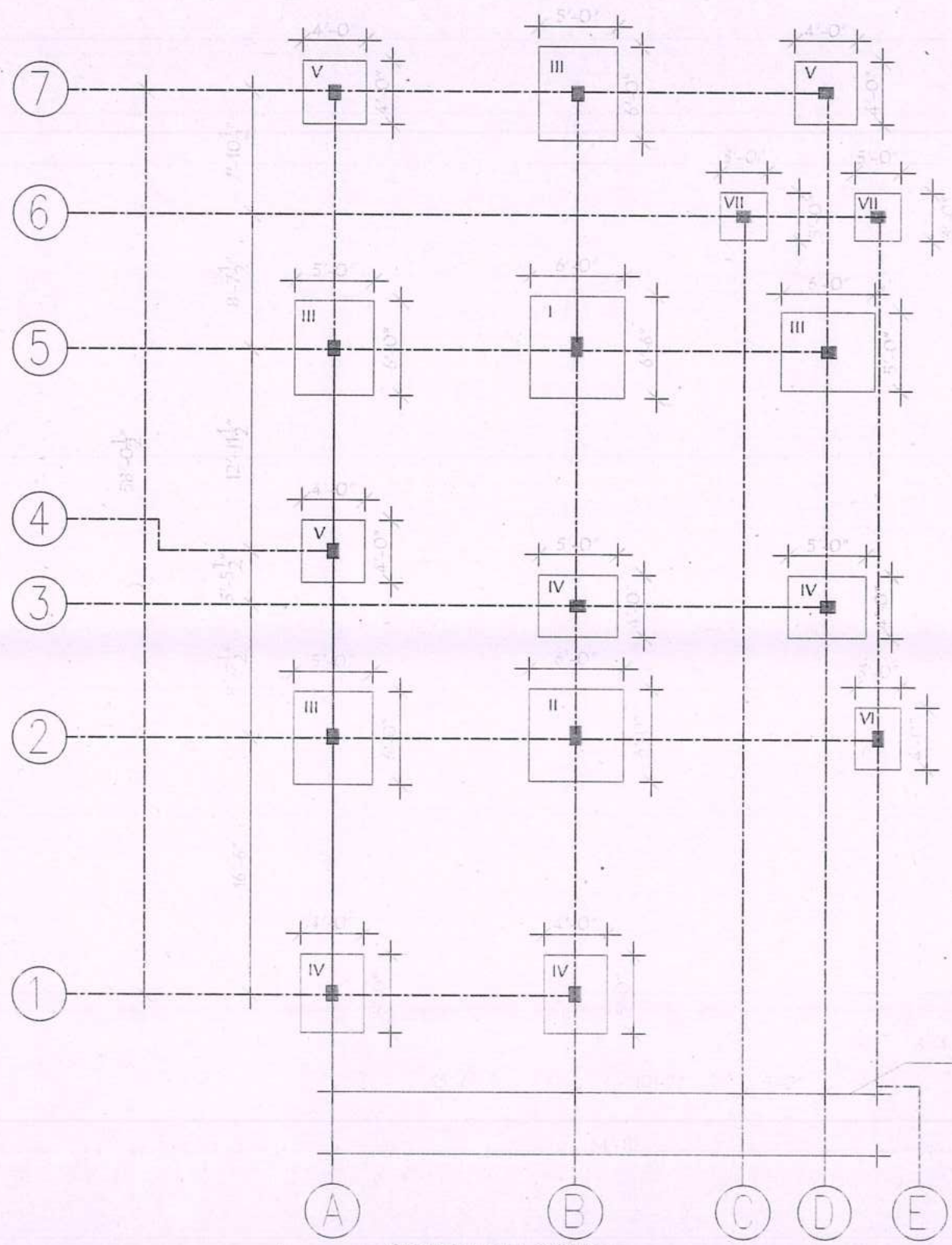
SLAB CRANK DETAIL (TYP)

CLIENT :	TRIN CONSTRUCTION
CONSULTANT :	SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN KAIKKURUCHI, PUDUKKOTTAI
PROJECT :	PROPOSED RESIDENTIAL BUILDING
TITLE :	FD DETAIL OF GROUND FLOOR ROOF SLAB
SCALE :	NTS
SHEET :	1 OF 1
REV :	00

Dr. **S.THILAGAVATHI** M.E., Ph.D.,
 PRINCIPAL
 SRI BHARATHI ENGINEERING
 COLLEGE FOR WOMEN

Received
 [Signature]

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CENTER LINE LAYOUT
 (ALL GRID LINES GIVEN ARE CENTER LINE OF BRICK WALL)

FOOTING SCHEDULE

TYPE	COL; SIZE
I	9"x15"
II	9"x15"
III	9"x12"
IV	9"x12"
V	9"x12"
VI	9"x12"
VII	9"x12"

ISSUED FOR CONSTRUCTION

ALL DIMENSIONS ARE IN FEET AND INCHES

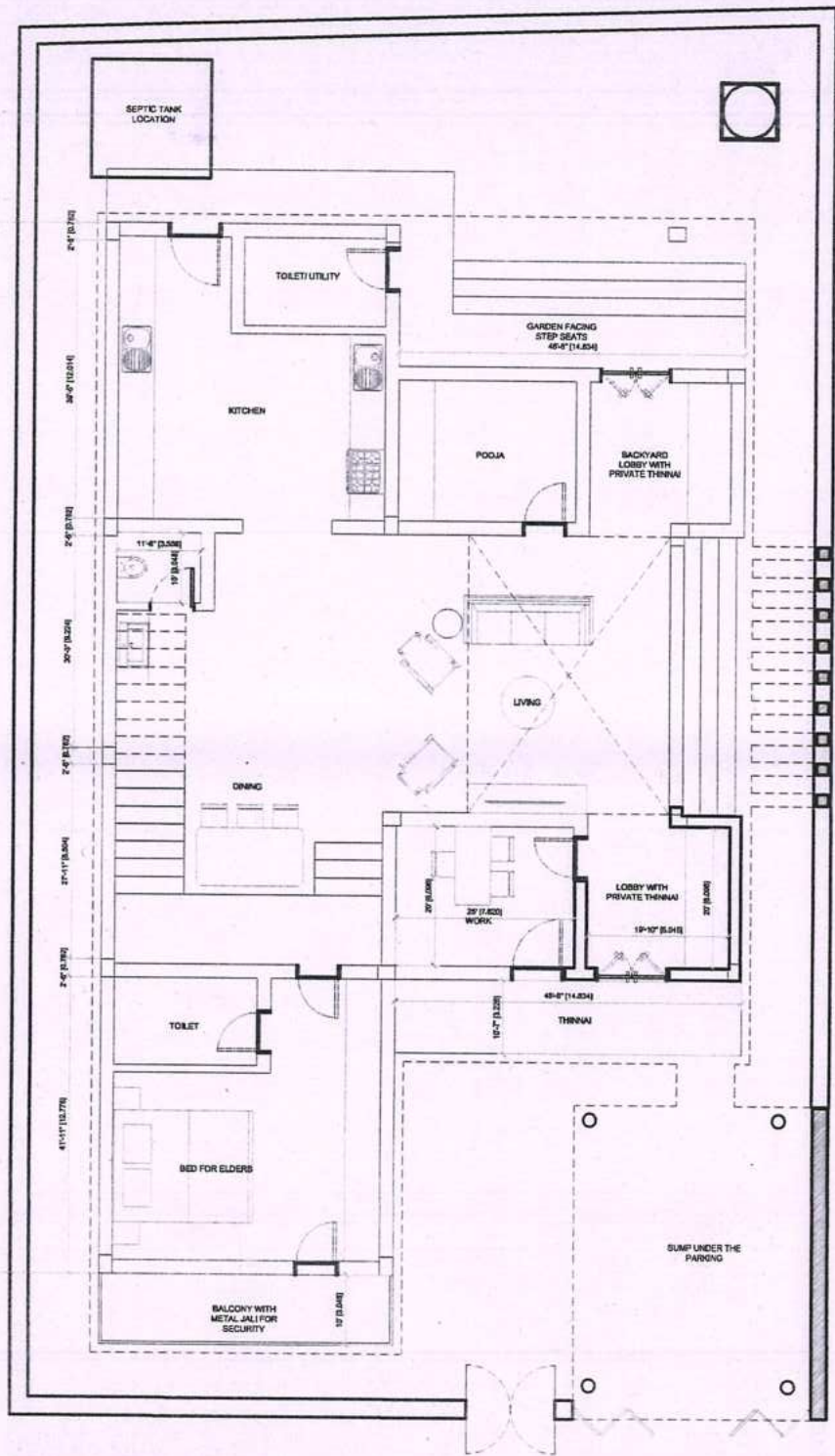
REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
CLIENT :	TRM CONSTRUCTION				
CONSULTANT :	SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN KAIKKURUCHI, PUDUKKOTTAI.				
PROJECT :	PROPOSED G+1 RESIDENTIAL BUILDING				

TITLE : CENTER LINE DRAWING

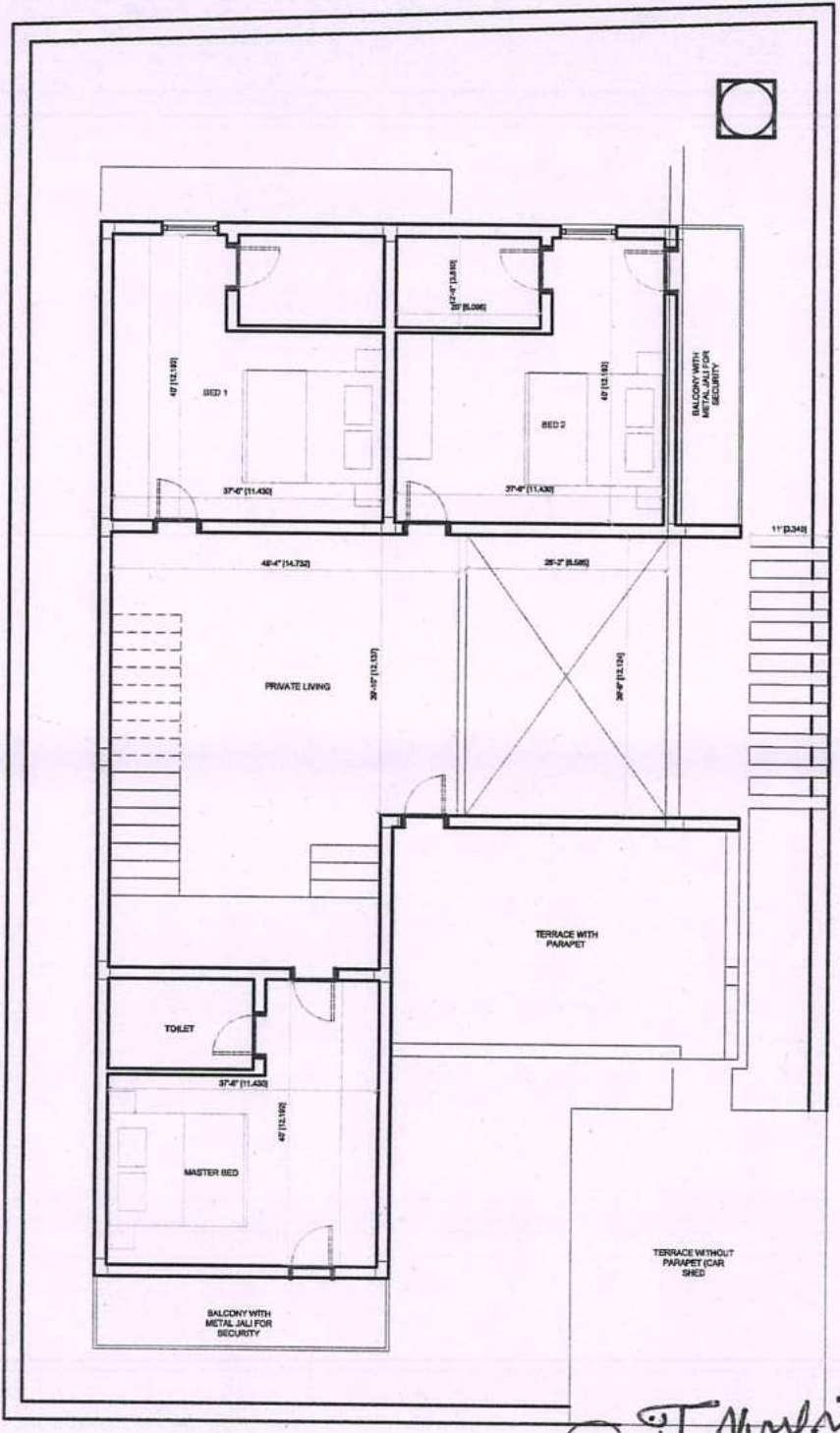
SCALE : NTS

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

Received



MAIN HOUSE-GF
1:50



MAIN HOUSE-FF
1:50

T. Srinanthy
Received

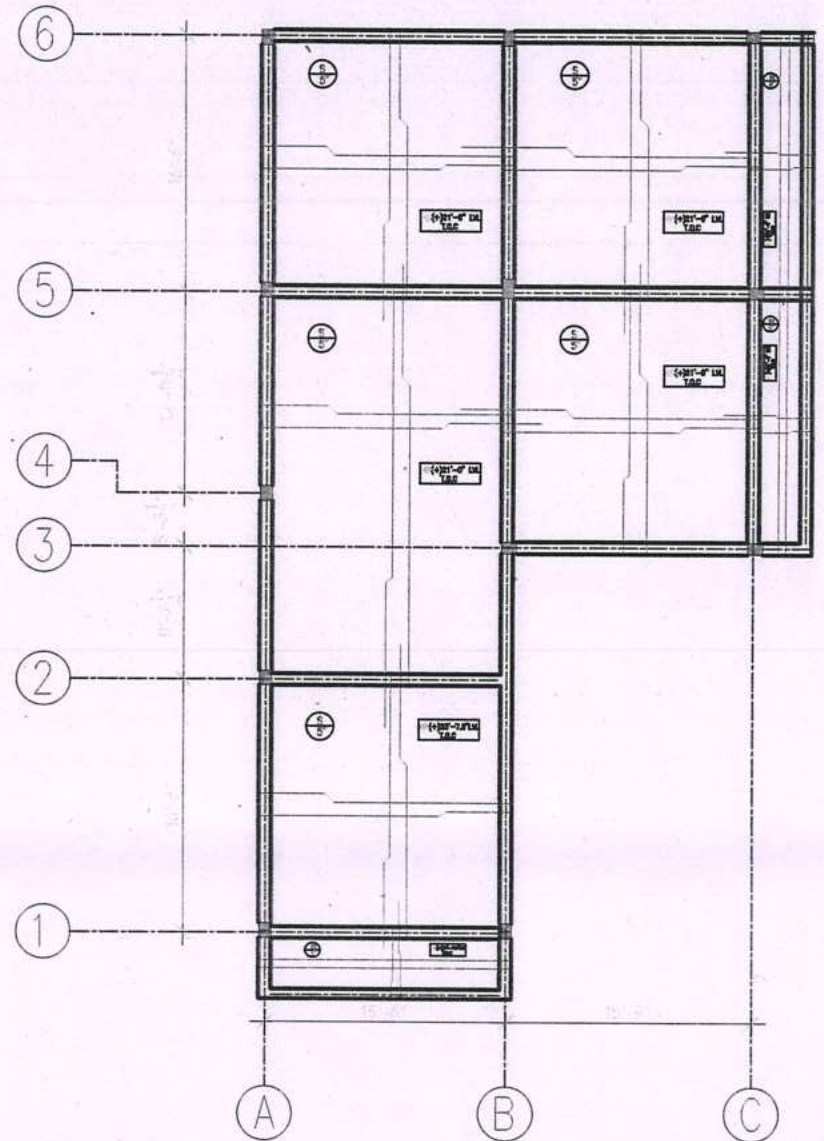
CLIENT : TRM CONSTRUCTION
CONSULTANT : SRI BHARATHI ENGG. COLLEGE FOR WOMEN

S. Thilagavathi

Dr. S. THILAGAVATHI M.E., Ph.D.,
PRINCIPAL

SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
Koitkuruchi - 622 303, Pudukkottai Dt.

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ROOF SLAB LAYOUT @ E.L. (+) 20'-0" T.O.S

(ALL GRID LINES GIVEN ARE CENTER LINE OF BRICK WALL)

SCHEDULE OF SLAB

NAME	SLAB TYPE	REINFORCEMENT
S	TWOWAY SLAB	# 10 @ 7" C/C - BOTH WAYS
S1	ONEWAY SLAB	# 10 @ 7" C/C - BOTH WAYS

ISSUED FOR CONSTRUCTION

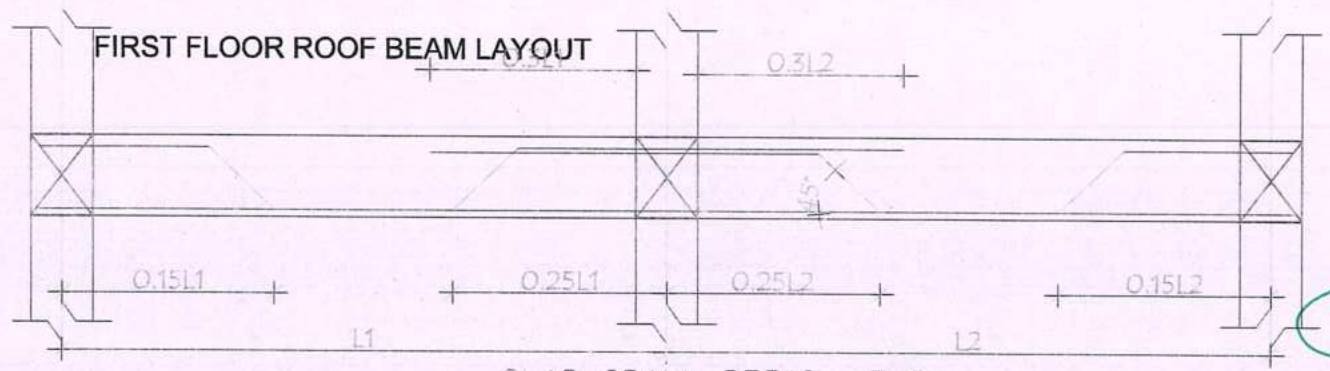
ALL LEVELS ARE FOLLOWED FROM F.F.L

ALL DIMENSIONS ARE IN FEET AND INCHES

CLEAR COVER = SLAB - 3/4"

GRADE OF CONCRETE - M20

GRADE OF STEEL - Fe 500



FIRST FLOOR ROOF BEAM LAYOUT

SLAB CRANK DETAIL (TYP)

DESCRIPTION	
CLIENT :	TKM CONSTRUCTION
CONSULTANT :	SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN KAIKKURICHI, PUDUKKOTTAI
PROJECT :	PROPOSED G+1 RESIDENTIAL BUILDING
TITLE :	ROOF DETAIL OF ROOF SLAB

SCALE : NTS

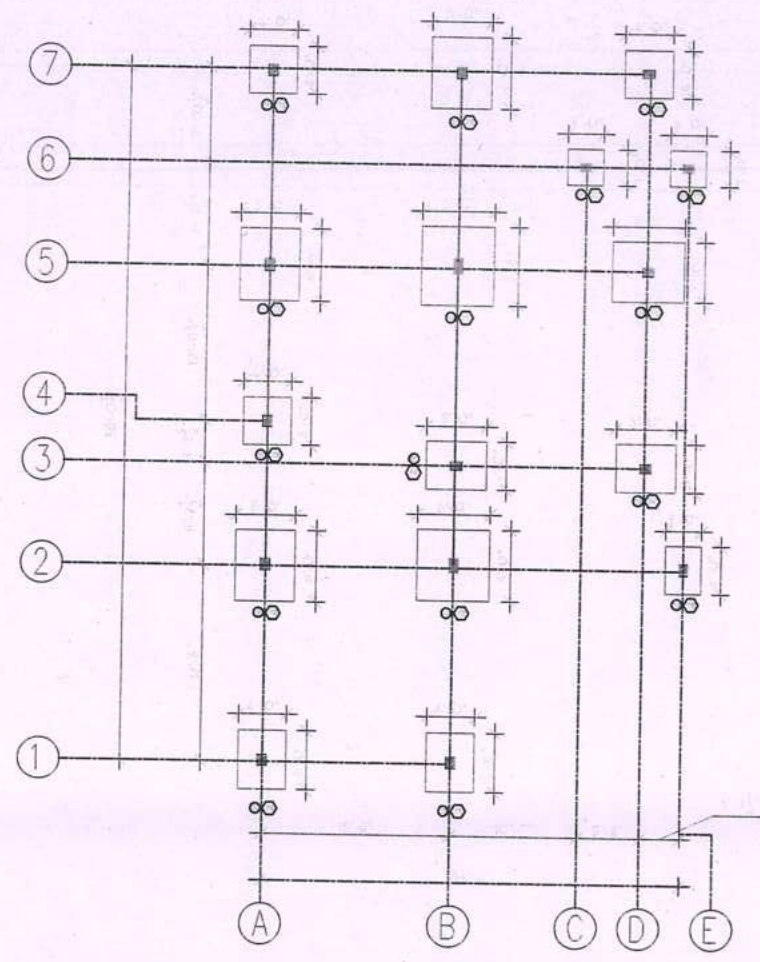
Dr. S. THIRUMAGAVATHI M.E., Ph.D.,

PRINCIPAL
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN

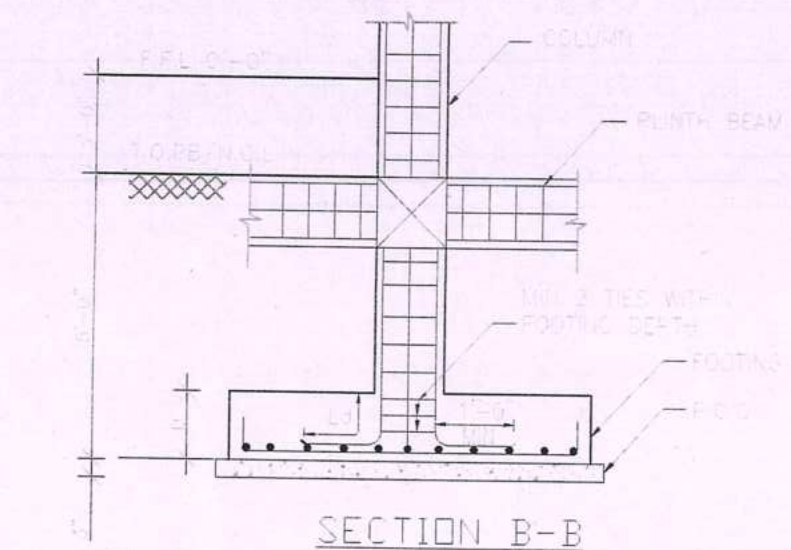
Kaikkurichi - 622 303, Pudukkottai Dt

OT. Manjathy
Received

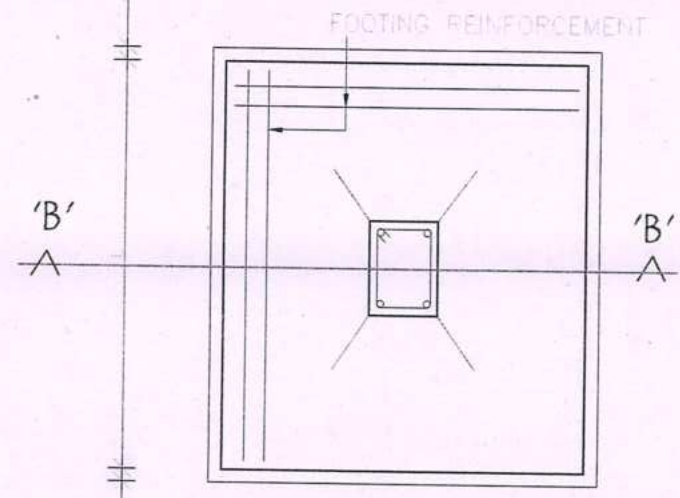
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FOOTING LAYOUT
 ALL GRID LINES GIVEN ARE CENTER LINE OF BRICK WALL



SECTION B-B



FOOTING PLAN (TYP)

ISSUED FOR CONSTRUCTION

CLEAR COVER
 FOOTING = 2"
 COLUMN = 1.5"

MINIMUM DEPTH OF EXCAVATION
 5 FEET BELOW THE
 NATURAL GROUND LEVEL

ALL DIMENSIONS ARE IN
 FEET AND INCHES

GRADE OF CONCRETE - M20

GRADE OF STEEL - Fe 500

SCHEDULE OF FOOTINGS

TYPE	FOOTING SIZE			FOOTING REINFORCEMENT
	L	B	D	
F1	6'-0"	6'-6"	1'-6"	BOTHWAYS - #12 @ 6"C/C
F2	6'-0"	6'-0"	1'-6"	BOTHWAYS - #10 @ 6"C/C
F3	6'-0"	5'-0"	1'-6"	BOTHWAYS - #10 @ 6"C/C
F4	5'-0"	4'-0"	1'-6"	BOTHWAYS - #10 @ 6"C/C
F5	4'-0"	4'-0"	1'-0"	BOTHWAYS - #10 @ 6"C/C
F6	4'-0"	3'-0"	1'-0"	BOTHWAYS - #10 @ 6"C/C
F7	3'-0"	3'-0"	1'-0"	BOTHWAYS - #10 @ 6"C/C

SCHEDULE OF COLUMNS

S.NO	COLUMN TYPE	SIZE	CROSS SECTION	LONGITUDINAL RFT	LATERAL TIES
1.	C1	9"x12"		4 - #16	#8@7"c/c [1Tie]
2.	C2	9"x12"		4 - #16 4 - #12	#8@7"c/c [1Tie]
3.	C3	9"x15"		4 - #20 4 - #16	#8@7"c/c [1Tie]
4.	C4	9"x15"		8 - #20	#8@7"c/c [1Tie]
5.	C5	9"x12"		6 - #16	#8@7"c/c [1Tie]

DESCRIPTION	
CLIENT :	TRM CONSTRUCTION
CONSULTANT :	SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN KAIKKURUCHI, PUDUKKOTTAI
PROJECT :	PROPOSED G+1 RESIDENTIAL BUILDING
TITLE :	R.C DETAIL OF COLUMNS & FOOTINGS

SCALE : NTS
 Dr. S. THILAGAVATHI M.E., Ph.D.,
 PRINCIPAL

SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN
 Kaikkuruchi - 622 303, Pudukkottai Dt.

Handwritten signature and initials



SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN

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

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

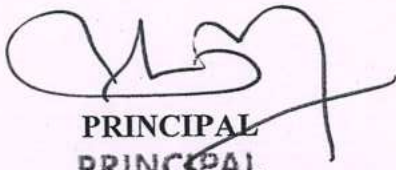
Date :

Date:16.02.2024

UTILISATION CERTIFICATE

Certified that an amount of **Rs.40,000/- (Forty thousand only)** sanctioned during the year of **2024** in favour of civil engineering received from **TRM Construction** has been utilized for the project consultancy work titled "**Design of Residential Building**". The purpose of which it was sanctioned has been duly fulfilled and delivered as per conditions of grant were satisfied.


PROJECT INVESTIGATOR


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


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