



Swami Vivekanand College of Engineering

(Approved by: AICTE, New Delhi • Affiliated to RGPV, Bhopal and DAVV, Indore • Recognised by : DTE Govt. of MP)

Campus : Khandwa Road, Indore-452020 (M.P.) Phone : +91- 07324-405000

• Email : info@svceindore.ac.in • Website : www.svce.vivekanandgroup.com

Declaration

Metric 7.1.3

I declare that all the data, pictures, reports and other information enclosed in the criteria are authentic to the best of my knowledge.

Criteria In-charge

Mr. Vishal Wankhade



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Environment Audit Report



**Environment Audit Report
Swami Vivekanand College of Engineering
Indore (M.P.) Year 2022-23**



**Environment Audit Report
CONSULTATION**



**Swami Vivekanand College of Engineering
Khandwa Road, Indore
Pin-452009
Madhya Pradesh, India**

PREPARED BY

EMPIRICAL EXERGY PRIVATE LIMITED

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(Academic Year 2022-23)

**IQAC COORDINATOR
SWAMI VIVEKANAND
COLLEGE OF ENGINEERING
KHANDWA ROAD, INDORF**

**PRINCIPAL
SWAMI VIVEKANAND
COLLEGE OF ENGINEERING
KHANDWA ROAD, INDORF**



Environment Audit Report
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ACKNOWLEDGEMENT

Empirical Exergy Private Limited (EEPL), Indore takes this opportunity to appreciate & thank the management of **Swami Vivekanand College of Engineering, Indore** for giving us an opportunity to conduct environment audit for the institute. We are indeed touched by the helpful attitude and co-operation of all faculties and technical staff, who rendered their valuable assistance and co-operation during the environment audit.

Rajesh Kumar Singadiya

(Director)

M.Tech (Energy Management), PhD (Research Scholar)

Accredited Energy Auditor [AEA-0284]

Certified Energy Auditor [CEA-7271]

(BEE, Ministry of Power, Govt. of India)

Empanelled Energy Auditor with MPUVN, Bhopal M.P.

Lead Auditor ISO50001:2011 [EnMS) from FICCI, Delhi

Certified Water Auditor (NPC, Govt of India)

Chartered Engineer [M-1699118], The Institution of Engineers (India)


Member of ISHRAE [58150]



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Green Monitoring Committee

**Swami Vivekanand College of Engineering**
(An ISO 9001 : 2008 Certified Institute)

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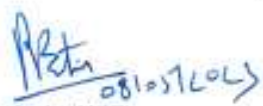
SVCE/Prin./2023-24/ 85 Date: 08.05.2023

Circular
Green Campus Committee

Constitution of Committee for Energy/Environment/Green Audit

In the view of environmental impact assessment & procedures for situation requiring urgent action regarding regular assessment of pollution, soil degradation & waste management following Committees are constituted for Environment preservation in the campus w. e. f. date of issue, for three years.

Name of Committee	Name of the members
1. Green Audit:	Dr. Rahul Joshi (Assist. Prof.) Mr. Mahesh K. Patidar (Assist. Prof.) Mr. Rupesh patel (Lab Assist.)
2. Environment Audit:	Ms. Megha Garg (Assist. Prof.) Mr. Brajesh Upadhyay (Assist. Prof.) Ms. Surekha Rathore (Assist. Prof.)
3. Energy Audit:	Mr. Hemendra Khedekar (Head EX.) Mr. Ravindra Sharma (Assist. Prof.) Mr. Balram Kushwah (Electrician)


Principal (SVCE)

Copy to:

1. Director, SVGI, for information
2. Committee member, for necessary action
3. All staff member, SVGI



**Environment Audit Report
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Environment Audit Team

The study team constituted of the following senior technical executives from
EmpiricalExergy Private Limited,

- ✚ **Mr. Rakesh Pathak**, [Director & Electrical Expert]
- ✚ **Mr. Rajesh Kumar Singadiya** [Director & Accredited Energy Auditor AEA-0284]
- ✚ **Mrs. Laxmi Raikwar Singadiya** [Chemical Engineer]
- ✚ **Mr. Charchit Pathak** [Mechanical Engineer]
- ✚ **Mr. Praveen Puniyasa** [Jr. Technician]
- ✚ **Mr. Ajay Nahra**, [Sr. Accountant & admin]



EXECUTIVE SUMMARY

The executive summary of the environment audit report furnished in this section briefly gives the identified water conservation measures that can be implemented in a phased manner to water conservation and increase the productivity of the institute.

INITIATIVE TAKEN BY INSTITUTE

RAINWATER HARVESTING SYSTEM

- Institute has “Rainwater Harvesting System” in institute campus for maintaining ground water level. This system saves about 70 to 80 % of roof top rain water of the building.-**Its Appreciable**
- Installation of water over flow sensors on tank pipe for saving of water in the institute.- **Its Appreciable**
- Institute installed organic compose formation machine to use kitchen waste to keep environment healthy & clean- **It’s Appreciable**
- Institute organized plantation programme every year to keep the environment balance- **It’s Appreciable**
- Institute installed Grid connected rooftop Solar PV System of 50 KWp capacity & in year 2022-23 generated solar power around **38%** of consumption- **It’s Appreciable**

WATER SPRINKLER SYSTEM

- Institute Install Water Sprinkler System in Lawn area. It will be reduced water consumption of Institute Campus- **It’s Appreciable**



AUDIT RECOMMENDATION

+ FRESH WATER MONITORING SYSTEM:

Installation of Sensor based Taps in wash room & drinking points to save water.

+ WASTE WATER TREATMENT PLANT

There is requirement to install Sewerage Treatment Plant (STP) for waste water generated from various activities in the campus.

All waste water generated from above activity is collected in separate tank and it should be treated in propose STP Plant

+ DRIP WATER IRRIGATION SYSTEM FOR GARDENING.

Use drip water irrigation system for gardening.

+ USE EFFICIENT WATER TAPS

Water saving taps either reduce water flow or automatically switch off to help save water. So, it is highly recommended to install efficient water taps in the campus to reduce fresh water consumption.

+ USE EFFICIENT URINAL FIXTURE

At present institute have conventional urinals in the washroom area. Replacing these inefficient fixtures with water sense labeled flushing urinal can save between 0.5 to 04 Liter per flush without sacrificing performance. Installing water saving flushing urinal will not only reduce water use in facilities but also save water pumping cost on water bills.



CHAPTER-1 INTRODUCTION

1.1 About Institute

Swami Vivekanand College of Engineering, Indore has glorious history under Swami Vivekanand Group of Institutions. The Swami Vivekanand Group of Colleges is widely known for its commitment to excellence in preparing students to address the current and future needs of society, while performing with Intergrid, compassion, and competence.

SVCE started its journey in the year 2004 with the aim of providing education to students and empowering them so that they can be financially independent, socially conscious, morally upright and emotionally balanced. The Institute is best equipped with excellent infrastructure facilities, combined with the support of academicians, experts from the industry, and other fields to cater to the needs of the student's community. The Institute ensures that you get the best possible support, both academically and socially.

The Institute proudly announces the during past 19 years journey, it has been serving the society by providing excellent environment for education in area of Engineering & Management. It promotes the innovative teaching methodologies to help students gain practical knowledge and better insights about applying the theoretical knowledge. It believes in imparting education along with preparing students for corporate world. With a lush green campus spread over a large areas of located in the heart of the Indore city, the institute is well connected through all means of transport.



Figure 1.1: - Satellite image of SVCE, Indore from Google Map



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Vision

Swami Vivekanand College of Engineering (SVCE) aspires to create Center of Excellence for continuous learning by providing state-of-art Techno-Management Education to the students and learners, by enhancing the capabilities to be the Techno-Management Thought Leaders.

Mission

The mission of the Swami Vivekanand College of Engineering (SVCE)

1. To impart human values and to promote leadership qualities among students.
2. To set up a suitable infrastructure and provide better resources to students and faculties.
3. To encourage academic excellence amongst faculties and students.
4. To impart education based on scientific, moral and value-based foundation to meet the Challenges of the technologically advancing global environment.

1.2 About Environment Auditing

Water audits can be a highly valuable tool for institute in a wide range of ways to improve their energy, environment and economic performance. While reducing wastages and operating costs. Water audits provide a basis for calculating the economic benefits of water conservation projects by establishing the current rates of water use and their associated cost.

1.3 Objectives of Environment Audit

The general objective of water audit is to prepare a baseline report on water conservation measures to mitigate consumption, improve quality and sustainable practices.

The specific objectives are:

- To monitor the water consumption and water conservation practices.
- To assess the quantity of water, usage, quantity of waste water generation and their reduction within the college.

1.4 Target Areas of Environment audit

This indicator addresses water sources, water consumption, irrigation, storm water, appliances and fixtures aquifer depletion and water contamination are taking place at unprecedented rates. It is therefore essential that any environmentally responsible institution should examine its water use practices.



1.5 Methodology followed for conducting Environment audit

Step 1: Walk through survey

- ✦ Understanding of existing water sourcing, storage and distribution facility.
- ✦ Assessing the water demand and water consumption areas/processes.
- ✦ Preparation of detailed water circuit diagram.

Step 2: Secondary Data Collection

- ✦ Analyze historic water use and wastewater generation
- ✦ Field measurements for estimating current water use
- ✦ Metered & unmetered supplies.
- ✦ Understanding of “base” flow and usage trend at site
- ✦ Past water bills
- ✦ Waste water treatment scheme & costs etc.

Step 3: Site Environment Audit Planning (based on site operations and practices)

- ✦ Preparation of water flow diagram to quantify water use at various locations
- ✦ Wastewater flow measurement and sampling plan

Step 4: Conduction of Detailed Environment Audit & Measurements

- ✦ Conduction of field measurements to quantify water/wastewater streams
- ✦ Power measurement of pumps/motors
- ✦ Preparation of water balance diagram
- ✦ Establishing water consumption pattern
- ✦ Detection of potential leaks & water losses in the system
- ✦ Assessment of productive and unproductive usage of water
- ✦ Determine key opportunities for water consumption reduction, reuse & recycle.

Step 5: Preparation of Environment Audit Report

- ✦ Documentation of collected & analyzed water balancing and measurement details
- ✦ Projects and procedures to maximize water savings and minimize water losses.
- ✦ Opportunities for water conservation based on reduce/recycle/reuse and recharge.



CHAPTER- 2 WATER CONSUMPTION AND WASTE WATER SOURCES

2.1 Details of Fresh Water source:

The main source of freshwater is Tankers come from outside the institute. The freshwater is mainly used for drinking, housekeeping, gardening, lab activity. Details of the fresh water are given in table 2.1

Table: 2.1 Details of Fresh water sources

Sr. No.	Sources	Tanker Capacity (Lt)	No. of Tanker/day
1	Fresh Water supply by Tanker	7000	6



Fig. 2.1 Fresh water supply by outside Tankers

Observation: -

There is one source of fresh water supply by Tankers in campus.



2.2 Water Accounting System



Fig. 2.2 Fresh water pumping station

Observation:-

Environment audit team observes that there are required water meter on water pumping system. So it is recommended to install water flow meter on water pumping side to quantify the fresh water consumption per day.



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2.3 Water Storage Capacity in Institute Campus

There are different type of water tanks available in institute for water storage like, RCC tank and PVC tanks.

Table 2.2 - Water storage tanks in Institute campus

Sr. No.	Location	No. of Tank	Tank Capacity	Material
1	Under Ground Main Tank	1	90,000 Liters	RCC
2	UG block	1	2000 Liter	Syntax
3	MBA block	1	2000 Liter	Syntax
4	Canteen	1	1000 Liter	Syntax
5	Admin Block	1	2000 Liter	Syntax
	Total	5	97,000 Liters.	



Fig: - 2.3 Main underground Water Storage Tank in Institute campus

Observation:- It is observed that underground RCC main tank of institute capacity 90,000 Liters.

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Photographs of water storage tanks in institute campus

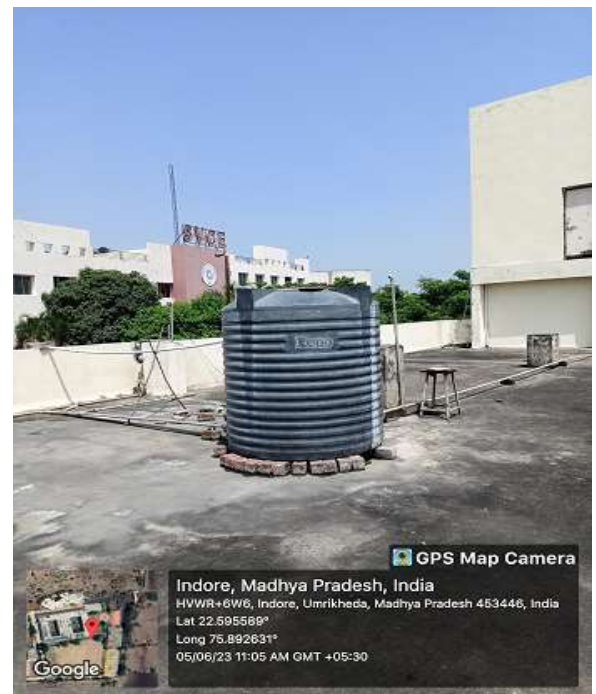
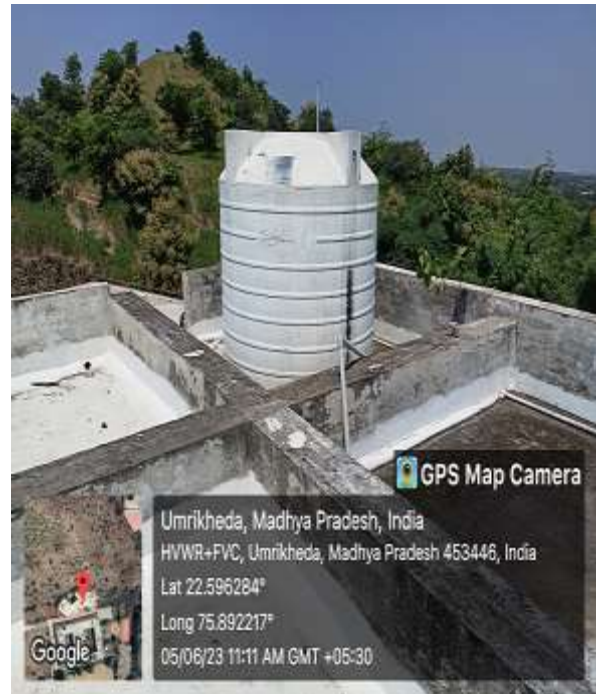


Fig - 2.4 Water Storage Tanks in Institute campus

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2.4 Fresh water Distribution Layout in Institute

Environment Audit team studies the water sources and prepared water distribution flow system in the campus.

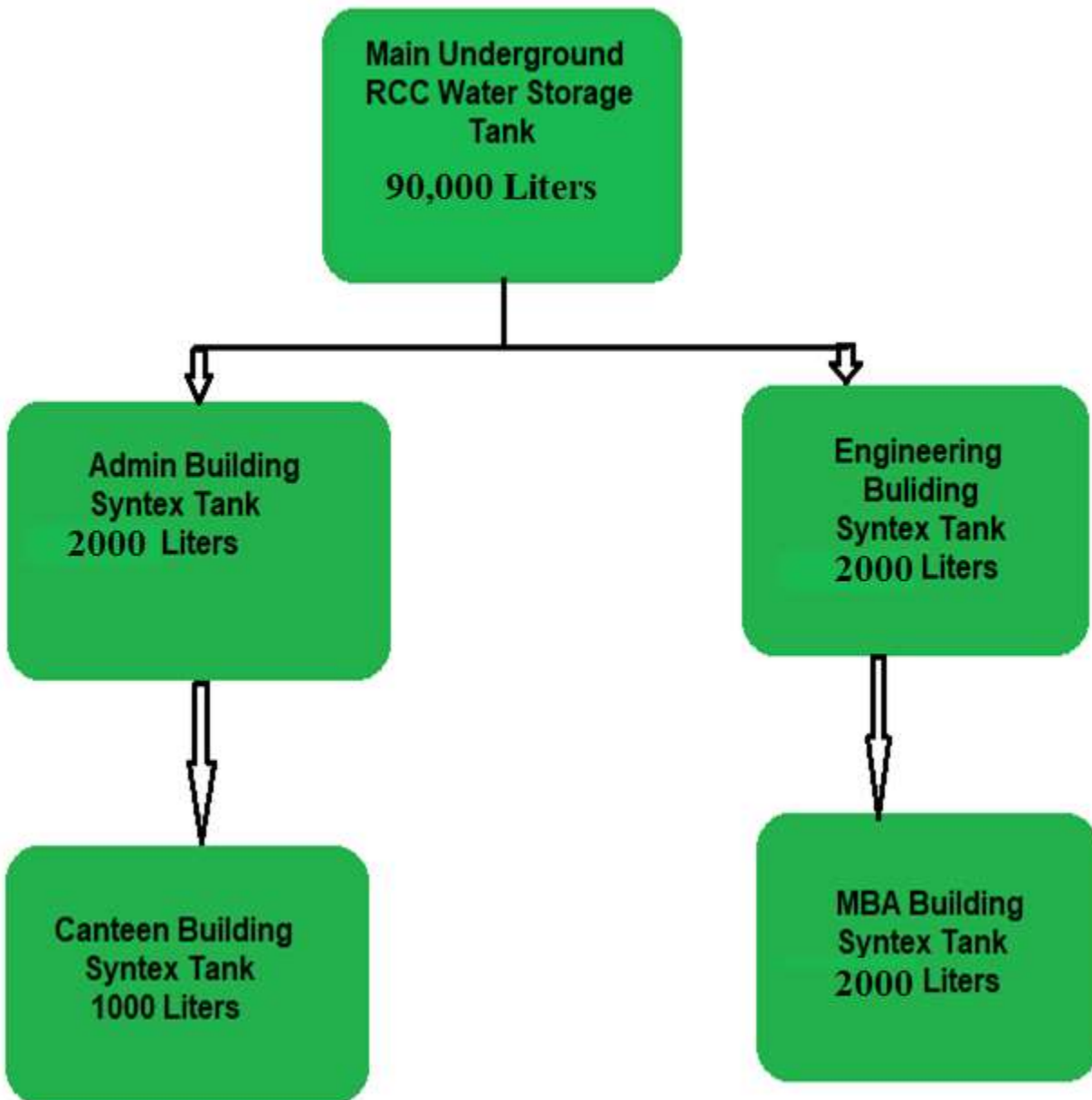


Fig: - 2.5 Layout of Water distribution system in Institute campus



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2.5 Water Use Areas in The Campus

Water is preliminary used for drinking, domestic, gardening and lab activity. Audit team visited various departments and buildings to determine water consuming equipments. The details of washroom, toilet and service water taps are given in table

Table: 2.3 Details of washroom and uses taps in various areas

Sr. No.	Location	Urinals	Fresh Taps	Toilets Taps	Hand wash
1	MBA Ground Floor	8	4	4	3
2	MBA First Floor	4	4	2	2
3	MBA Second Floor	4	4	2	2
4	Engg Block Ground Floor	12	-	12	14
5	Engg Block First Floor	10	12	10	7
6	Engg Block Second Floor	10	11	20	5
7	Canteen	4	9	6	6
8	Admin Building Ground Floor	8	2	8	8
9	Admin Building First Floor	8	-	8	8
10	Admin Building Second Floor (Library)	1	-	1	1
	Total	69	46	73	56

Observation:-

✚ There are 69 urinals, 46 Water taps with 73 Toilets taps with 56 hand washing.



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2.6 Details of water coolers & drinking points in Institute campus

Table: 2.4 Details of water cooler in the campus

Sr. No.	Location	No of Water Cooler	Drinking Points
1	Admin Block	1	1
2	Engg Block Ground Floor	1	-
3	Engg Block First Floor		3
4	Engg Block Second Floor		3
5	MBA Block (1,2 & 3 Floor)	-	3
6	Canteen	1	2
7	Workshop	1	1
Total		4	13



Fig: - 2.6 Water Filters for drinking water in Institute campus

Observation: -

It is observed that there are centralized RO systems for drinking water requirement in Engg. Block & separate water cooler for Admin block, canteen, workshop.



2.7 Fresh water uses for gardening:

The one of major contribution from fresh water consumption is watering for other plants in Institute campus. There is good potential for water saving by adopts “Automatic Watering 360 adjustable misting nozzle irrigation Dripper’s system for plants. Adjustable drip irrigation tools to provide different amounts of water depending on the water requirements of different plants. The drip speed can be set as for indoor and outdoor plants.



Fig: - 2.7 Sprinkler system for gardening

Observation:-

- It is observed that there is sprinkler water supply system for plant.

2.8 Waste Water Generation sources: -

At present waste water generated from various blocks Engg. MBA, Admin, canteen & other activity likewashrooms, hand wash etc.

Table: 2.5 Details of water cooler in the campus

Sr. No.	Location	Type of water used	Water Consuming activities
1	Admin Block	Fresh Water	Drinking and other uses
2	Engg. Block	Fresh Water	Drinking and other uses
3	MBA Block	Fresh Water	Drinking and other uses
5	Canteen	Fresh Water	Drinking, domestic and other activities
6	Ground + Other	Fresh Water	For Gardening Purpose

Some Photo Graphs of waste water generation source



Fig: - 2.8 Waste water generation sources

Observation:-

It is observed that all waste water is drain in to environment without any treatment of waste water. So, it is recommended installing STP for all waste water generated in the campus.

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2.9 Kitchen Waste Management policy



Fig. 2.9- Kitchen waste organic compost formation machine

Observation- College installed organic compost formation machine using kitchen waste-to keep environment clean & eco-friendly- **Its appreciable**



CHAPTER- 3 RAIN WATER HARVESTING SYSTEM

3.1. Rain Water Harvesting Systems

The rainwater harvesting is a technique to capture the rainwater when it precipitates, store that water for direct use or charge the groundwater and use it later.

There are typically four components in a rainwater harvesting system:

- ✚ Roof Catchment
- ✚ Collection
- ✚ Transport
- ✚ Infiltration or storage tank and use.

If rainwater is not harvested and channelized its runoffs quickly and flow out through storm- water drains. For storm-water management the recharge pits, percolation pits and porous trenches are constructed to allow storm water to infiltrate inside the soil.

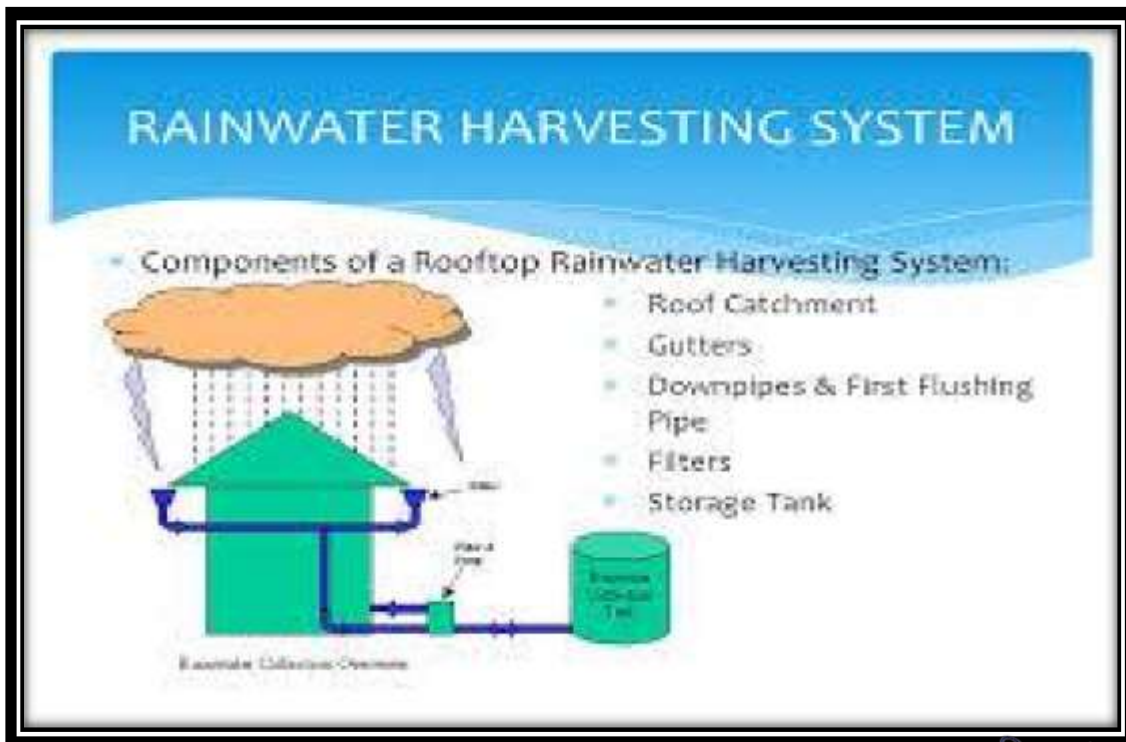


Figure: - 3.1 Rooftop rainwater harvesting system



3.2 Rain Water harvesting storage in Institute

Various types of Buildings like Admin Block, Engg. Block MBA Block, etc. Rain Waterharvesting system is installed. **It is Appreciable**

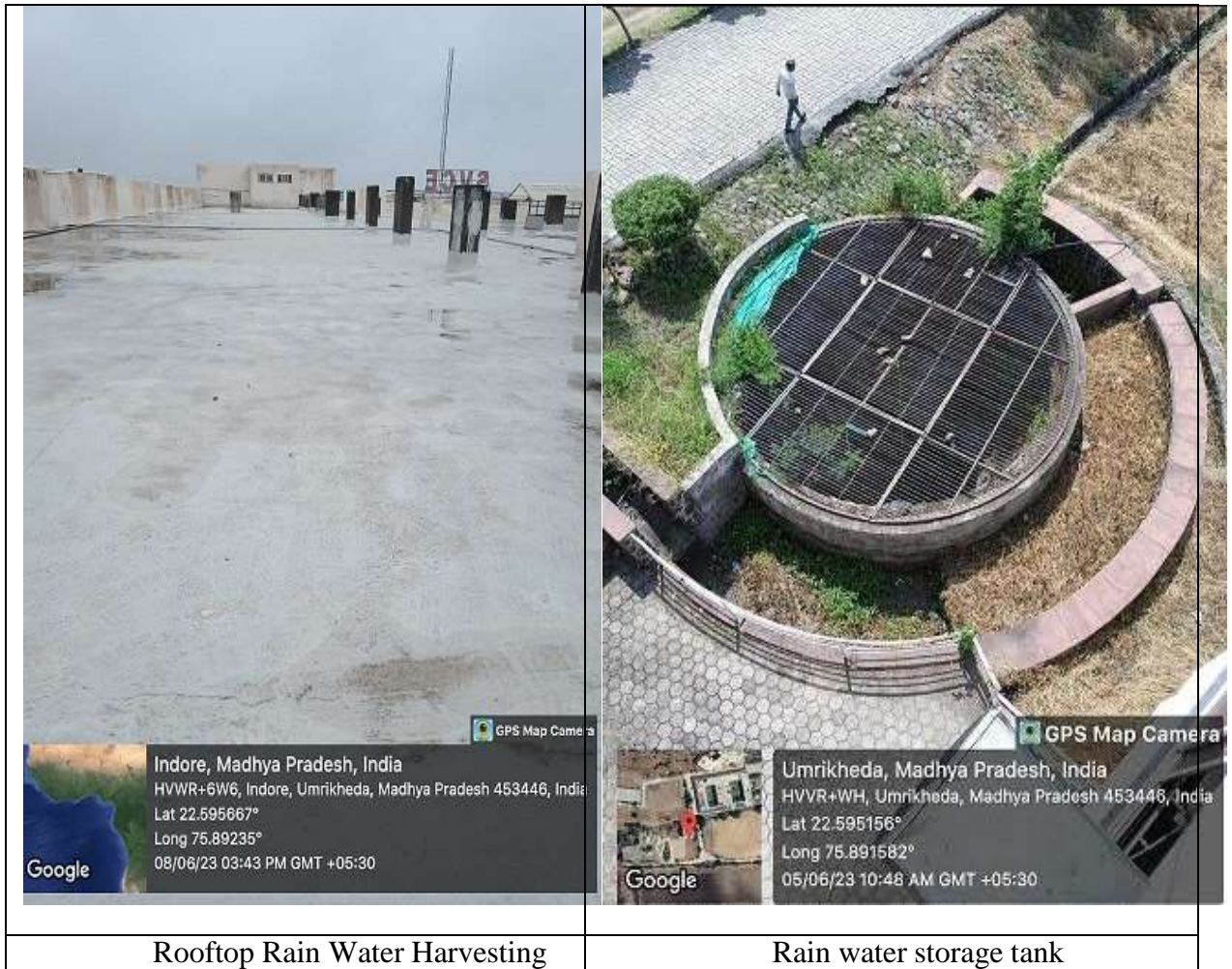


Figure: - 3.2 Components of a rooftop rainwater harvesting system

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**END OF THE REPORT
THANKS**

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