GREEN BUILDING AUDIT FOR EXISTING BUILDING GREEN BUILDING AUDIT REPORT

Project name – IDEAS-Institute of Design Education & Architecture Studies

Location – Nagpur

Date – 20-03-2020



1. Provide ramp with railing at the entrance of building and various levels at buildings for differently abled person. (Mandatory)





RAMP 1 SLOPE 1:1:6



RAMP 2 SLOPE 1:10



20.03.202016.15

RAMP 3 SLOPE 1:6



2. Provide toilets for differently abled person. (Mandatory)





3. Provide firefighting equipment/systems which are halon free (Mandatory)

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Sr. No.	PARTICULARS	Date	Rate Rs.
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CO2 Type

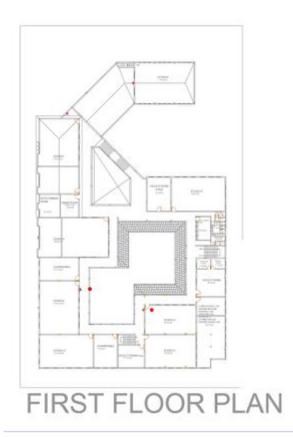


ABC Type



Water CO2 Type







GROUND FLOOR PLAN



Provide renewable energy system (Mandatory)

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Swargiya Jagannath Jattewar Shikshan Sanstha , Nagpur institute of ${f d}$ esign ${f e}$ ducation & ${f a}$ rchitectural ${f S}$ tudies , ${f N}$ agpur







4. Provide parking for differently abled person near building entrance (Mandatory)







5. Provide no smoking signage (Mandatory)









6. Use CFC/HCFC refrigerants and Phase out refrigerant, which has ozone-depleting potential. (Mandatory)









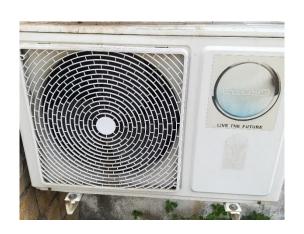














7. Wastewater treatment and recycle if the number of building users are above 500.(Mandatory)

DEWAT System

The waste water from toilets is passed through three stages before storage and is again filtered for reuse.

Stage 1- Sedimentation: Waste water from the toilets on both floors is collected by a well-constructed drainage system leading to the closed septic tanks. There are two septic tanks. Each consists of two chambers, sedimentation takes place in first chamber.





Figure 3 Septic Tank

Stage 2- Anaerobic Filtration: The overflow from the septic tank is allowed to pass through an Effluent Treatment tank which has with four stages of filtration; i) Stone gravel; ii) Aggregate; iii) Sand and iv) Charcoal.



Figure 4 Four chambered anaerobic treatment tank

Stage 3- Aerobic Treatment: The final stage of treatment uses root zone system of aquatic plants. First the effluent is passed through three beds of duck weed and then two beds of water hyacinth. The treated water is allowed to stand in the last chamber to be disinfected by UV rays in sunlight.



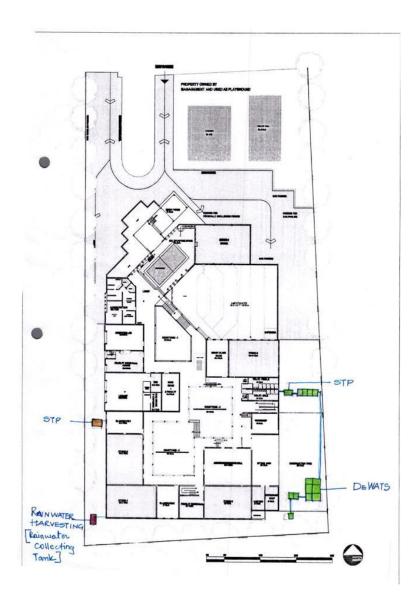
Figure 5 Aerobic treatment tank



Stage 4- Storage & Reuse: The treated water is again allowed to pass through a two-chamber filtration tank having sand and charcoal. This removes any dirt and plant matter. The water is then stored in an underground tank having capacity of 4500L. This tank is connected to a separate overhead tank which provides water for flushing in toilets.



Figure 5 Filter and Storage tank





IDEAS- INSTITUTE OF DESIGN EDUCATION AND ARCHITECTURAL STUDIE4S, NAGPUR To, The Principal, IDEAS, Nagpur 24.09.18 Dear Sir, As per our discussion, we have prepared the proposal for sewage treatment plant at IDEAS. This Septic tank, Effluent Treatment with four stages and final extract treatment using Root Zone System of aquatic plants. The proposal has I septic tank, each for students tollet in East margin and I septic tank for Faculty Toilet in West margin of the Campus. The attached sets of drawings elaborate the scheme. This is for your approval and sanction. The tentative cost is estimated at about INR 1, 75, 000/-Approved offer discussion with secretary SISE Thankyou. Yours sincerely anwalk (V.B.Jariwala) Attachments 1. Drawing details of Septic tank and effluent treatment details in the east margin 2. Drawing details of final extract treatment using root zone system by aquatic plants in the east margin 3. Drawing details of Septic tank and sump in the west margin

8. Install energy meter at building level to monitor the energy consumption (Mandatory)



9. Install water meter at building level to monitor the water consumption (Mandatory)





10. Garbage segregation, collection and disposal (Mandatory)

Wet waste from the kitchen is composted and the manure that it yields is used in landscape areas. Dry waste from classrooms, staff rooms and office is segregated.

- Paper and sheets are sold to identified agency for recycling.
- Single side paper is used for rough work.
- Rest of dry waste is sent to landfill

Sanitary napkins are burnt in incinerator

Composting

Bio-degradable waste mainly generated by the canteen is recycled through a process of composting.



The waste is allowed to degrade or decompose an oxygen rich medium in a pit created behind the canteen. The matter is turned at regular intervals until it is reduced into a fine powder. This is a good quality nutrient rich and eco-friendly manure that is then used in the landscaped area.



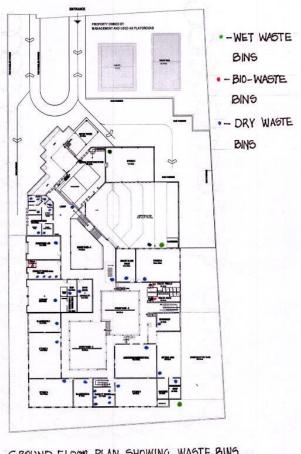
Used paper sold to identified agency for recycling

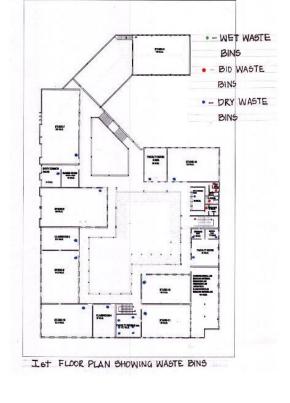


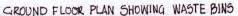
Incinerator in girls' toilet



11. Install multi-coloured bins at each floor to segregate waste at site.











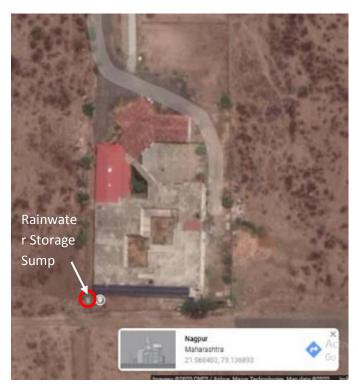
12. Install rainwater harvesting system on site, either for storage or recharging the ground water table, if admissible.

Spouts and rainwater pipes allow the rainwater from the terrace to fall into the courtyard where it is soaked into the ground. Benefits derived through this system are: i) tube well recharging and ii) rise in water table. The institute draws water from the tube well for daily use.



At present a sump tank of capacity 4100 liters is constructed at south west corner of the campus to store rainwater for reuse in watering plants and cleaning. The institute has planned to increase the system in phases.







13. Provide water efficient fixtures and faucets.

Indian WCs are installed. Taps are fitted with aerators.







14. Install energy efficient lighting fixtures – LED tubes and light

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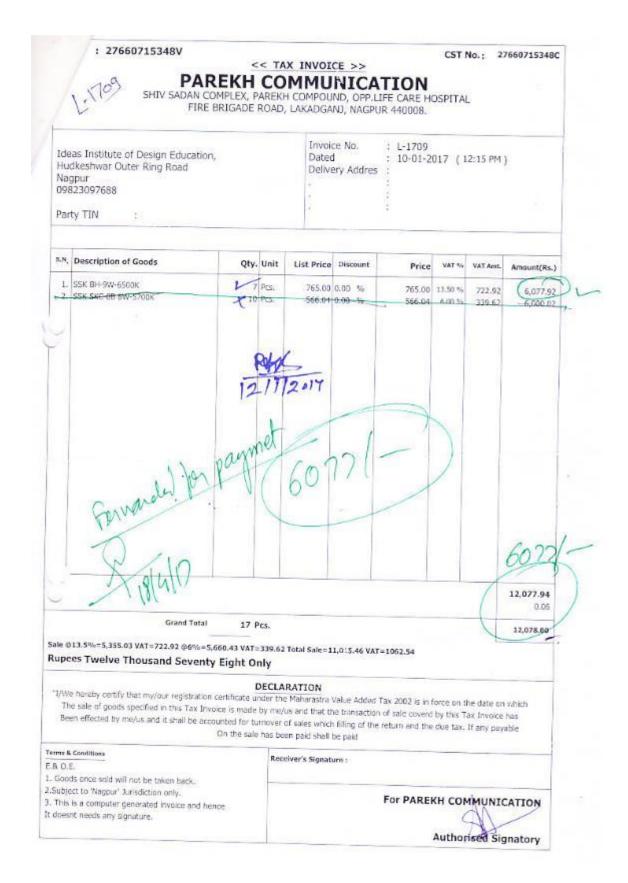


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Swargiya Jagannath Jattewar Shikshan Sanstha , Nagpur institute of ${f d}$ esign ${f e}$ ducation & ${f a}$ rchitectural ${f S}$ tudies , ${f N}$ agpur

LIST OF LIGHTS IN THE CAMPUS

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M.ARCH 1	0	36	0	8	12	96			
M.ARCH 2	0	36	0	12	12	144			
M.ARCH STUDIO	0	36	0						
Ground floor corridor	7	36	252	11	8				
First floor corridor	21	36	756	0					
STAFFROOM 1	3	36	108	1	18	18	4	9	36
57.11.11.0 511.1 2	2	40	80			10	•		
STAFFROOM 2	10	36	360						
STAFFROOM 3	7	36	252						
			 						
STAFFROOM 4	6	36	216						
COMPUTER ROOM	4	36	144	8	10	80			
LIBRARY	8	36	288				5	9	45
OFFICE	4	36	144	1	20	20	2	9	18
M.K.G.'s CABIN	3	36	108	0			2	9	18
A. V. P. 's CABIN	0	36	0	1	20	20	2	36	72
				4	7	28			
U. C. G.'s CABIN	0	36	0	1	20	20	2	36	72
ENTRANCE LOBBY	0	36	0	4	45	180			
O. A. T.	0	36	0	10	9	90			
PORCH	4	36	144	10	,	30			
NAAC ROOM	4	36	144						
	+	30		-	12	72			
1ST FLOOR WASHROOM	200		0	6	12	72	25		
	290		3500	121		1524	25		333
TOTAL LIGHTING POWER I	REQUIREMEI	NT IN WATT	per HR	5357					3833
TOTAL LIGHTING POWER I	RECHIREMEN	NT IN WATT	ner DAV	37499		10668			26831
. O. AL LIGHTING FOWER	CONCIVIE	VV PATE	PELDAI	3,733		10000			20031
TOTAL LIGHTING POWER I	REQUIREME	NT IN WATTS	per MONT	н 899976		256032			643944
ANNUAL LIGHTING POWER	R REQUIREM	ENT IN WAT	TS	10799712		3072384			7727328
		-							
ANNUAL LIGHTING DOVE	DECHIDE	ENT IN MA	L	10700 74		2072 204			7777 220
ANNUAL LIGHTING POWE	· NEQUIKEN	LINI IN KWF	<u> </u>	10799.71		3072.384			7727.328
PERCENTAGE OF LIGTHING	MET THRO	UGH LED		28%					72%

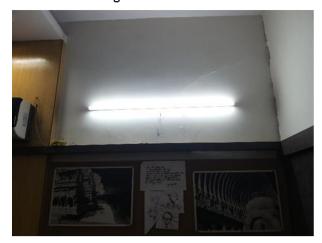




LED lights in Administration



LED light in office



LED lights in staffroom



LED light in Director's office



LED lights in Principal's Office



LED light in computer lab



15. Install energy efficient cooling system and appliances- BEE star rated.

No.of Airconditioners installed -

1.	Principal's Cabin	- 1
2.	Director's Cabin	-2
3.	Computer Lab	- 2
4.	G.F. Staff room	- 2
5.	Auditorium	-3
6.	AV rooms	- 5
	Total	15























16. Provide water efficient irrigation system.

Sprinkler system is installed



17. Make use of environment-friendly cleaning and for housekeeping materials



Patanjali products are used for cleaning



18. As per sanctioned drawings of building, the Building roof area if more than 25% of the total hard paved area, then it should be painted with high SRI paint.

12% of shading is due to solar panels. Rest will be painted in high SRI paint



19. Provide an electrical charging point (15 Amp) with signage at parking space.







Reserved Parking Space for Carpooling and EV Vehicles

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20. Provide preferred parking space for pooled vehicles with signage.

13 faculty members and 22 students use carpooling. Parking space is allocated for carpooling vehicles.



21. Provide shuttle service for the building occupants.

Bus service is provided for students and staff

Students Availing Bus Service										
Year	2014-15	2015-16	2016-17	2017-18	2018-19					
1st	80	79	51	51	60					
2nd	38	44	46	18	15					
3rd	20	6	6	1	2					
4th	4	9	0	0	0					
Total	142	138	103	70	77					
	38%	31%	23%	14%	15%					



22. Plant native trees on site at the proportion of the 1 mature tree per 80sqm of the plot area.

The college has 73 trees





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Palash Tree

Sita Ashok







Neem Tree

Saptaparni Tree

Karanji Tree



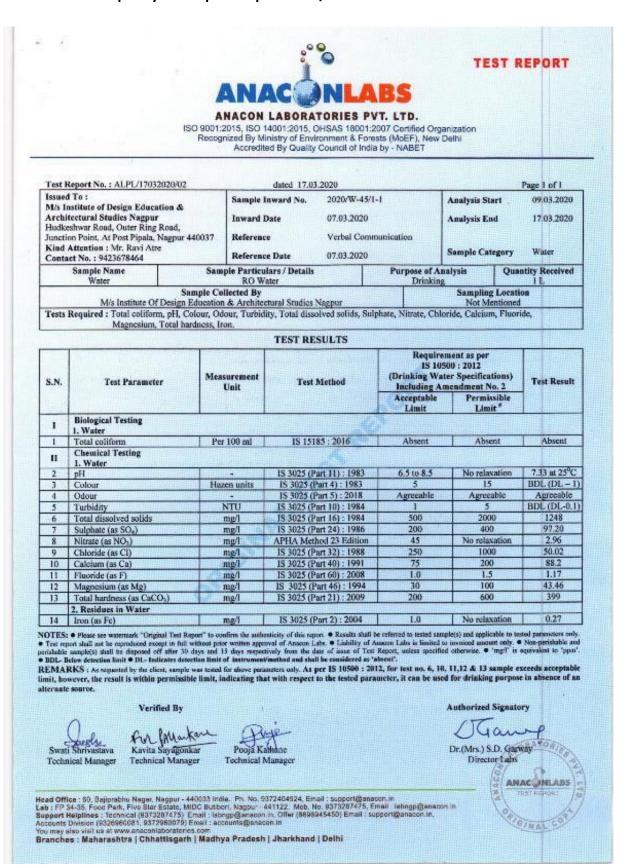


Yellow Copperpod

Bamboo & Badam



23. Conduct water quality test report as per CPCB /BIS Standards.





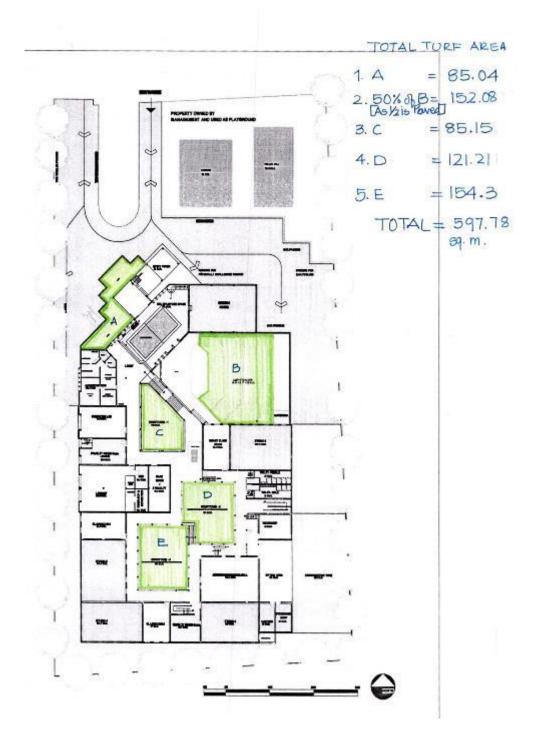
24. Provide a composting pit for organic waste or organic waste composter on site.





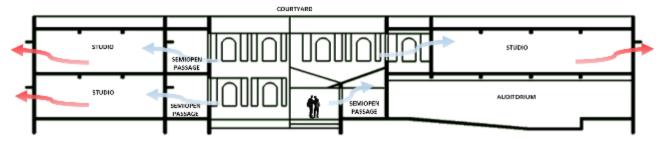


25. Reduce turf area It is recommended that Turf area shall be 25% of total landscape area



26. Fresh Air Ventilation – Provide adequate outdoor air ventilation to avoid pollutants affecting indoor air quality. For Naturally Ventilated Spaces Demonstrate that the ratio of openable area to the carpet area is at least 4% in each regularly occupied zone.

The institute has ample of light and ventilation since the building is designed to be one room deep at all sections. Each room opens on to a shaded semi-open passage which allows air flow and light to come in. The central courtyards are landscaped. Thus the air here is cool. It flows into the rooms and replaces the hot air. There are windows on at least two sides to allow cross ventilation. The passages cut glare and allow more shaded light inside the rooms.



SECTION THROUGH THE BUILDING

27. Occupant Well-being Facilities Ensure that the project has at least 2 occupant well-being facilities (such as gymnasium, aerobics, yoga, meditation or any indoor / outdoor games) to cater to at least 10% of building occupants, through the day.

Facilities Available

S No	Facility	No. of Participants
1	Volley Ball Court	12
2	Kabaddi Court	24
3	Badminton Court	4
4	Table Tennis	4
5	Indoor Games- Carom/ Chess	6
6	Space for Yoga / Meditation	25
	Total Participants	75

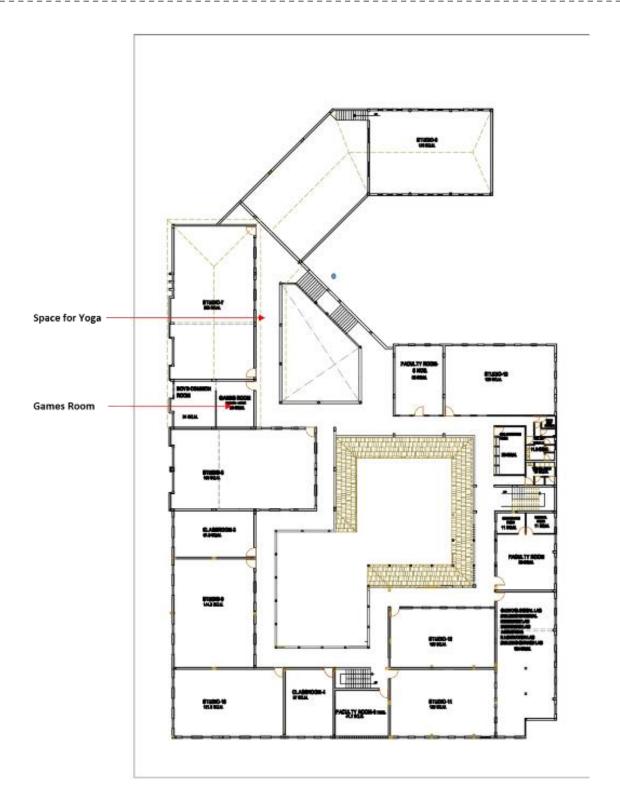


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Facilities for Well Being of Residents - Ground Floor Plan





Facilities for Well Being of Residents – First Floor







Volleyball Court

Badminton Court



Kho-kho played in kabbadi court



Chess in games room



28. Ensuring thermal comfort as per NBC 2005 or ASHRAE 55. Indoor noise level and daylight levels.

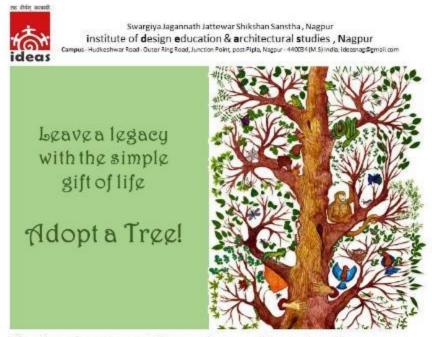
- Ensuring thermal comfort as per NBC 2005 or ASHRAE 55.
- Ensure indoor noise level as per NBC norms to enhance comfort level
- Ensure adequate daylight levels Ensure artificial lighting Lux level report as per NBC 2005.

Sr.no		Readings observed from the location						
Name of Location		Temperature	Humidity-	artificial	daylight	Indoor		
(Ground Floor)		(degree	RH	lighting Lux	levels	noise level		
		centigrade)		level	Lux level	(decibel)		
1.	Office	26.6	58.2	232	60	50.8		
2.	Principals cabin	26.9	50.2	263	52	53.8		
3.	Computer lab	26.9	55.6	263	35	43		
4.	Staff room	26.9	58.6	289	56	57.7		
5.	Library	26.4	50.6	265	154	42.1		
6.	Classroom 1	26.8	58.8	238	80	46.8		
7.	A. V. Room 2	24. 7	56.7	265	33	43		
8.	Classroom near	26	57.3	235	63	55.7		
	foyer							
9.	Auditorium	23. 6	50.2	266	30	44		

29. Innovation Credits- To encourage innovation in performance of existing buildings to reduce environmental impacts.

In an initiative to increase the green landscape of the IDEAS campus it was decided to conduct a Tree Plantation Week. The objective was to ask faculty members to adopt a tree which would encourage to look after it, water it and ensure its growth especially during the harsh summer months.

A list was also provided of native trees for the members to choose from. The administration staff were encouraged by this initiative and decided to contribute by planting mango, guava and neem trees in the front area of the campus. They ensured that the trees were safe by covering them with tree guards.



Planting a tree is one of the most powerful ways in which you can make a difference for the environment.

This year 2020 we need your help not just in planting the sapling, but in nurturing it to life and being responsible for its growth.

IDEAS celebrates

Adopt-a-Tree Week 26th-31st January

This week we encourage you to 1.Choose a spot on the campus 2.Buy a sapling (we will give you a few pointers) 3.Plant your tree

4.CARE for YOUR tree

5. Meet us same time next year for a group photo!

Let's Make our Campus Green!

An Initiative by Environmental Committee under IQAC, IDEAS

DECLARATION

We hereby declare that Institute of Design Education and Architectural Studies (IDEAS), Nagpur entitled for Existing green building program shall henceforth implement the following strategies by 30th June 2020.

- 1. Phase out all the ozone depleting potential air conditioners units with eco-friendly refrigerants (R-410A,R-32, R-134A,R-290,R-600A) for air conditioners units.
- 2. High SRI (Solar reflective index) paints shall be applied on roof paints
- 3. Ramps shall be made as per standards of NBC 2017

GOTMORE OND OSSOCIOTES
ARCHITECTS, INTERIOR DESIGNERS, GOVERNMENT VALUERS

ARCHITECTS, INTERIOR DESIGNERS, GOVERNMENT VALUERS
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FINAL GREEN BUILDING AUDIT FOR EXISTING BUILDING GREEN BUILDING AUDIT CERTIFICATE

Project name – IDEAS-Institute of Design Education & Architecture Studies

Location - Nagpur

This is to certify that the Existing Green Building Audit is done for IDEAS - Institute of Design Education & Architecture Studies, Nagpur and the team IDEAS has successfully achieved the green building standards required for sustainable and green building. However, some strategies will be implemented within 3 months from the date of final report and the declaration for the same is attached in the report.

Note: This is not green building rating system report or recommendations from any rating system.

Ar. Manisha Gotmare

Environmental Architect, Green Building consultant IGBC AP, GRIHA EB-intern Date – 20-03-2020