

To whom so ever It may concern

Date: 20.07.2021

Green Audit at MIT Arts, Commerce & Science College, Alandi is been successfully conducted in June 2021 with respect to following parameters.

**Environmental Consciousness and Sustainability**

- Energy conservation measures
- Waste management
- Water conservation
- Green campus initiatives
- Green Audit, Energy Audit, Environment Audit
- Barrier free environment

Content to state Green Audit of MIT Arts, Commerce & Science College, Alandi successfully comply all parameters as mentioned above.



*Bilwa Deo*



## **National Board for Quality Promotion** **(A constituent board of Quality Council of India)**

It is hereby certified that the credentials of

**Bilwa Deo**

meet the evaluation criteria requirements of the  
Consultant Registration Scheme of NBQP/QCI  
and is therefore Registered with NBQP/QCI

as a

**Senior Consultant for**  
**Environmental Management System (EMS)**



**SC/EMS/2022/001**



**C.K. Biswas**  
CEO, NBQP

\*For sector and scope related information, please visit our website [www.qcin.org](http://www.qcin.org)  
<http://nbqp.qcin.org/in/consultant/registered-consultants>

**Date of Issue : 1<sup>st</sup> January, 2020 | Validity Upto : 31<sup>st</sup> December, 2022**

Quality Council of India, ITPI Building, 6<sup>th</sup> Floor, 4 - A, Ring Road, IP Estate, New Delhi - 110002

Email : [info.nbqp@qcin.org](mailto:info.nbqp@qcin.org)

# Green Audit - MIT Arts, Commerce & Science Collège, Alandi

Dehu Phata, Alandi (D), Tal. Khed, Pune, Maharashtra - 412105



Compiled by-  
Ar. Bilwa Deo

*Bilwa Deo*



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## 2 Environmental Consciousness and Sustainability

- energy conservation measures
- Waste management
- Water conservation
- Green campus initiatives
- Green Audit, Energy Audit, Environment Audit
- Barrier free environment

Project Information	
Name of Project	MIT Arts, Commerce & Science College, Alandi.
Location	Alandi Devachi Pune
Project category	Institute Building
Stage of Project	Occupied







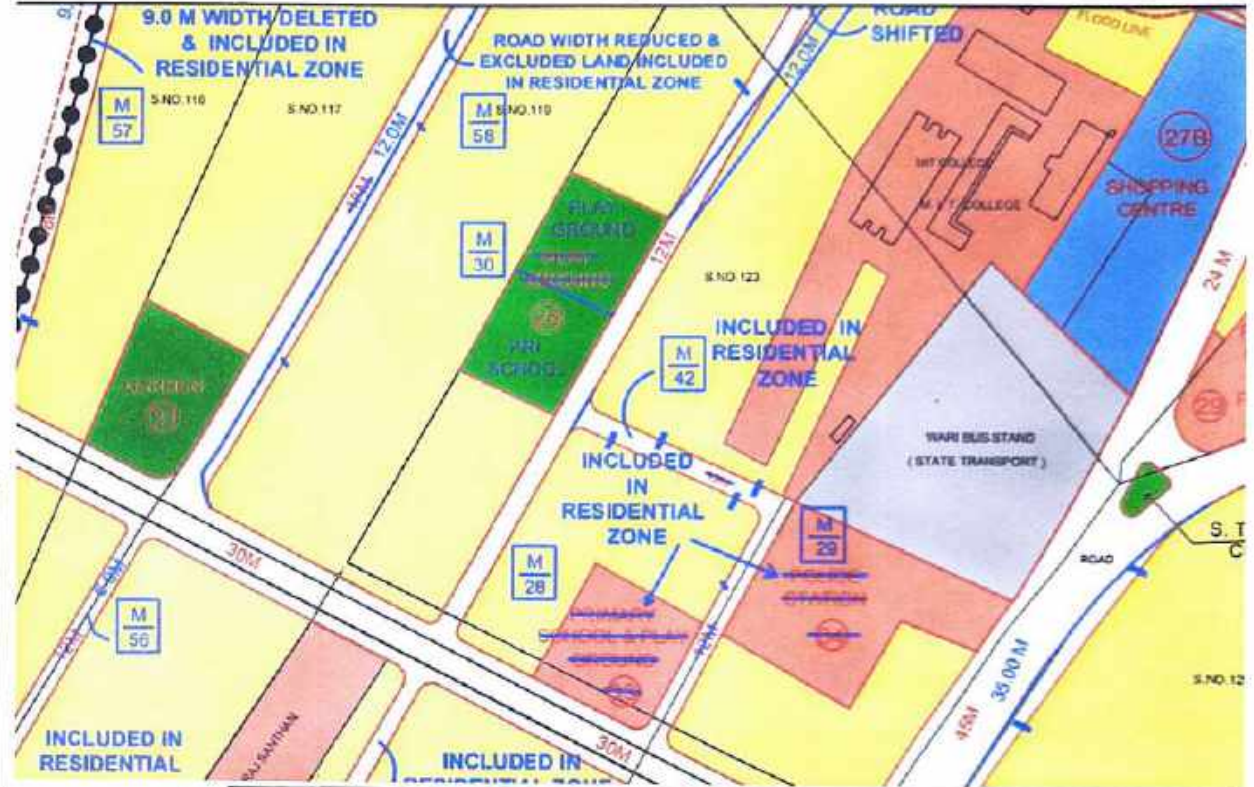
Local Building Regulations -

Are followed as per Alandi-Devachi Development Plan

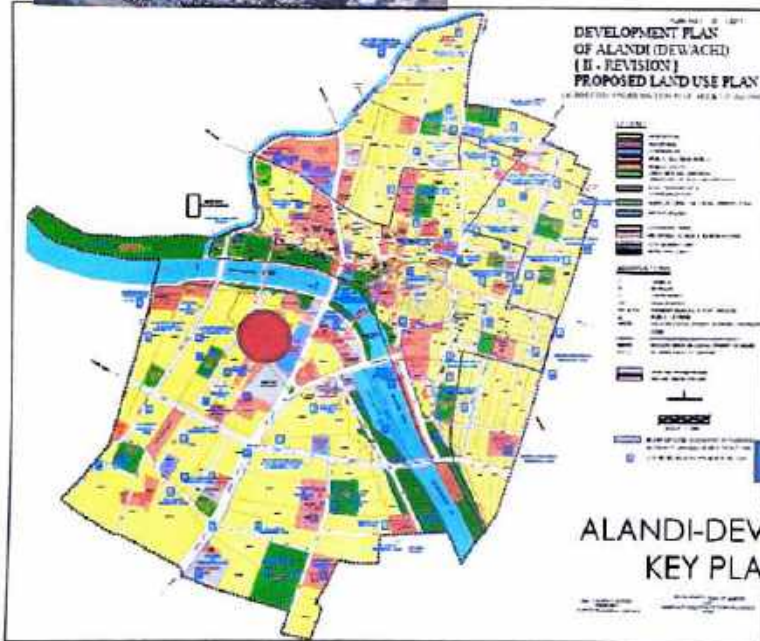
MIT Arts, Commerce & Science College, Alandi.

Play Ground

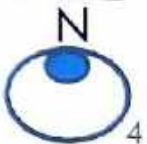
College building



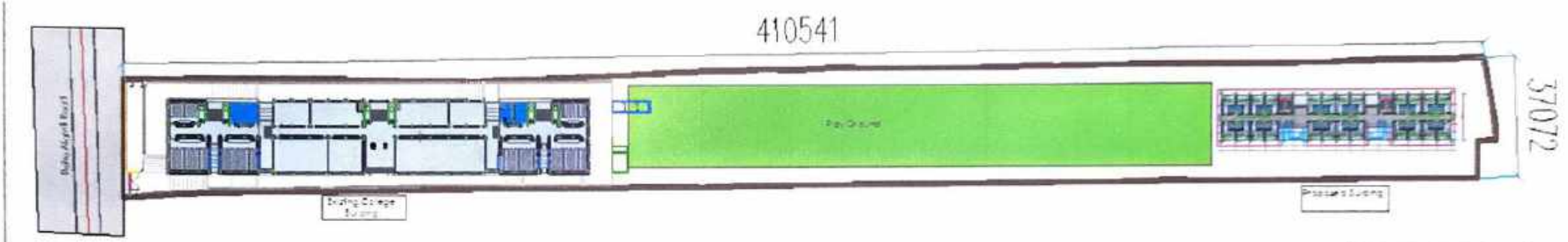
Development plan Alandi -Devachi showing MIT Arts, Commerce & Science College, Alandi located in land allotted for public purpose, where schools and college are permitted to occupied.



ALANDI-DEVACHI, KEY PLAN



# MIT Arts, Commerce & Science College, Alandi, Pune



Site Plan

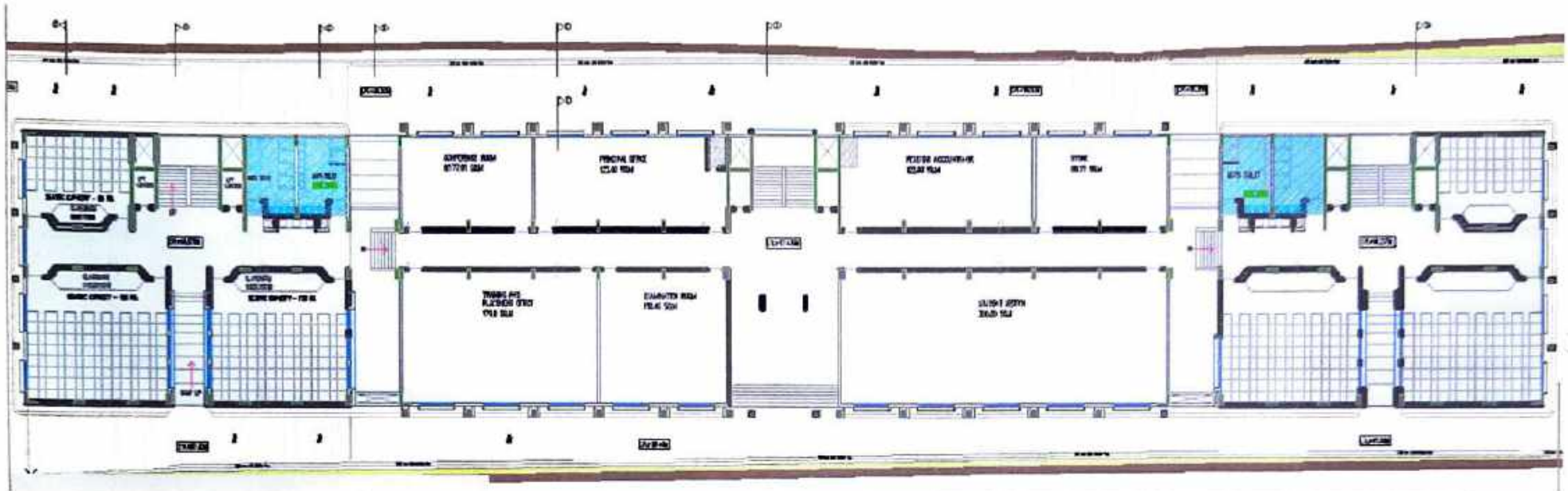


Project Area Statement		
Total Site Area	14, 677.10	SQ M
Number of Buildings/ Block/ Towers	2.00	No.

Legend	
Existing Building	
Road	
Pavers Block	
Open Space/ Play Ground	



# MIT Arts, Commerce & Science College, Alandi, Pune



Total Built-up area	20,000 SQM
Number of Floors	7
Building Height	B+6

Total Number of Occupants	1800.00
Number of Operational Days	300.00



7.1.2

## Environmental Consciousness and Sustainability

The institute has facilities for alternate sources of energy and energy conservation measures

6. Solar Energy

8. Wheeling to the grid

10. Use of LED bulbs/ Power efficient equipments

# Alternative Sources of energy and energy conservation measures

6

## Solar Energy - Grid Connected

18 40'23.67"N  
73 53'21.65'E



Solar Energy

Solar PV installation done from August 2019

Month	Air temperature (°C)	Daily solar radiation (kWh/m <sup>2</sup> /d)
January	20.5	6.74
February	22.0	7.22
March	25.6	6.50
April	28.8	6.39
May	29.7	7.04
June	27.4	3.70
July	25.3	2.14
August	24.5	2.15
September	25.1	4.19
October	25.0	6.03
November	22.3	6.50
December	20.2	6.75
<b>Annual</b>	<b>24.7</b>	<b>5.44</b>

Year 2019		Year 2020		
Month	Units	Month	Units	
Oct-19	9,186.00	Oct-18	14,400.00	5214 unit of saving from last year
Sep-19	12,157.00	Sep-18	14,917.00	2760 unit of saving from last year
Aug-19	12,906.00	Aug-18	14,234.00	1328 unit of saving from last year
Jul-19	15,264.00	Jul-18	14,008.00	
Jun-19	10,515.00	Jun-18	10,742.00	
May-19	10,428.00	May-18	9,841.00	
Apr-19	11,868.00	Apr-18	11,536.00	
Mar-19	12,947.00	Mar-18	14,023.00	
Feb-19	11,337.00	Feb-18	10,558.00	
Jan-19	10,714.00	Jan-18	10,394.00	
		Dec-18	10,750.00	
		Nov-18	8,809.00	



# Solar Energy - Grid Connected

8

Wheeling to the grid



System type	<b>Grid-Connected</b>		
Average Height	3.3"		
tilt	18°	azimuth	0°
Model	WS-315	Pnom	315 Wp
Nb. of modules	32	Pnom total	<b>10.08 kWp</b>
Solar Inverter	SOLIVIA 10 EU T4 TL	Pnom	10.00 kW ac
Unlimited load (grid)			

Purchas order is attached

Use of LED bulbs/ Power efficient equipments



18 40'23.67"N  
73 53'21.65'E





### 7.1.3

## Environmental Consciousness and Sustainability

The facilities in the institution for the management of the following types of degradable and non-degradable waste

1. Solid waste management
2. E-waste management
3. Waste recycling system - paper waste
4. Liquid waste management

# 1. Solid waste management

Waste segregation is happened on daily basis like listed below



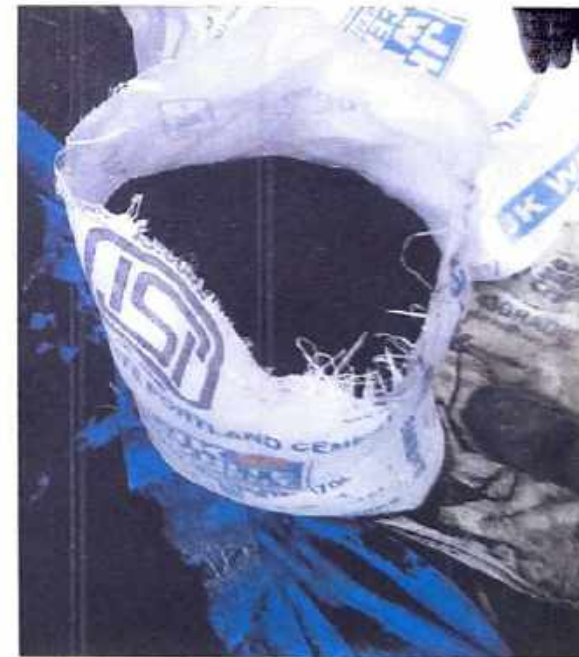


Solid waste management

Materials and Resources (Post Occupancy)			
Sr. No.	Points	Current	
1	Separation of waste	Capacity - Wet waste-30-35 kg /day Dry Waste- 10-12 kg/day	E- Waste, MOU is done with MPCB authorised group. (Copy attached) Paper waste – Recycled to various small scale dealers time to time (Monthly chalans are attached).



2	Organic Waste Management	<p>3 pits for collection of waste are available on site</p> <p>Is been done with the help of composting</p>
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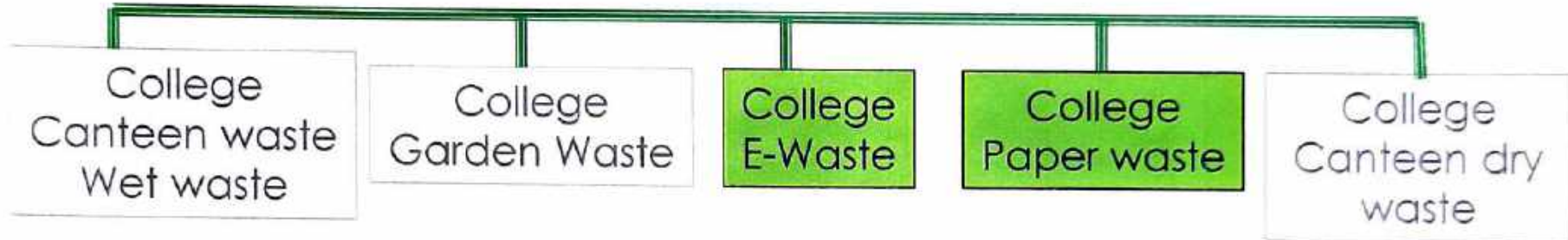




# Solid waste management

## 1. Solid waste management

Waste segregation is happened on daily basis like listed below



E-Waste collection MO has been done with MPCB certified E-Waste management company. MOU is attached herewith.

Paper waste is recycled through authorised company Chalans are also attached with the report.

**MAHARASHTRA POLLUTION CONTROL BOARD**

Phone : 24510437/24020795 /24027124/24033273  
 Fax : 24544552 /24024068 / 24023516  
 Email : robc@mpcb.gov.in  
 Website : www.mpcb.gov.in

Kalpatearu Point, 3rd & 4th floor,  
 Sion, Matunga Scheme Road No. 8, Opp. Cine Planet Cinema  
 Near Sion Circle, Sion (E),  
 Mumbai - 400 022

Red/S.S/Dismantler  
 UAN: MPCB-CONSENT-0000030263  
 Consent No: BOMPCB/RO/HQ/COB-180100174 Date: 5/10/2018

Consent to operate under Section 26 of the Water (Prevention & Control of Pollution) Act, 1974 & under Section 21 of the Air (Prevention & Control of Pollution) Act, 1981 and Authorization / Renewal of Authorization under Rule 6 of the Hazardous & Other Wastes (Management & Transboundary Movement) Rules 2016 & Authorization / Renewal of Authorization under Rule 18 of the E-Waste (Management) Rules, 2016.

[To be referred as Water Act, Air Act and HOW (M&TM) Rules respectively].

CONSENT is hereby granted to,

M/s. E-Waste Glothif  
 Gate No. 2, Near Thaur, Phata,  
 Lonikand, Pune-Nagar Road,  
 Tal. Haveli, Dist. Pune-412216

**MIT** Arts, Commerce & Science College  
 Andhra Pradesh - 500 025

**DELIVERY CHALLAN** 102

NO. MIT/2018/102  
 Date: 05/10/2018

From: MIT, Arts, Commerce & Science College  
 To: M/s. E-Waste Glothif

Sr	Description	Unit	Qty	Cost
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				

Please declare the above mentioned material is good condition and under the respective rules, if any signed.

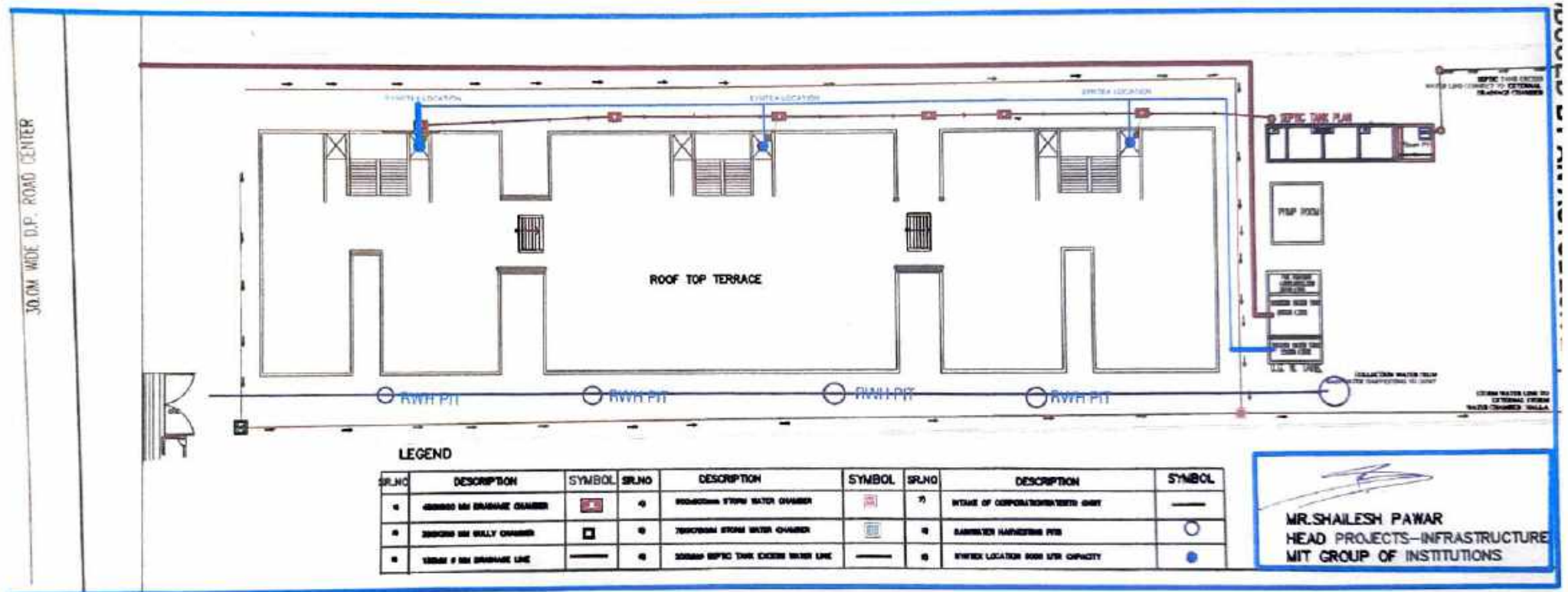
Thank you

Signature of Authorised Officer

M/s. E-Waste Glothif  
 Gate No. 2, Near Thaur, Phata,  
 Lonikand, Pune-Nagar Road,  
 Tal. Haveli, Dist. Pune-412216

S.No	Date	Description	Unit	Qty	Cost	Remarks	Weight
9	10/10/18	Waste Cardboard	kg	27	27	Waste Cardboard	3.5
10	11/10/18	Waste Cardboard	kg	12	12	Waste Cardboard	2
11	12/10/18	Waste Cardboard	kg	20	20	Waste Cardboard	2.7
12	13/10/18	Waste Cardboard	kg	3	3	Waste Cardboard	1.7
13	14/10/18	Waste Cardboard	kg	20	20	Waste Cardboard	6
14	15/10/18	Waste Cardboard	kg	3	3	Waste Cardboard	3
15	16/10/18	Waste Cardboard	kg	30	30	Waste Cardboard	2.7
16	17/10/18	Waste Cardboard	kg	24	24	Waste Cardboard	2.2
17	18/10/18	Waste Cardboard	kg	02	02	Waste Cardboard	3
18	19/10/18	Waste Cardboard	kg	1	1	Waste Cardboard	0.7
19	20/10/18	Waste Cardboard	kg	2	2	Waste Cardboard	1
20	21/10/18	Waste Cardboard	kg	23	23	Waste Cardboard	0.5
21	22/10/18	Waste Cardboard	kg	3	3	Waste Cardboard	2
22	23/10/18	Waste Cardboard	kg	1	1	Waste Cardboard	2.5
23	24/10/18	Waste Cardboard	kg	16	16	Waste Cardboard	2.7
24	25/10/18	Waste Cardboard	kg	2	2	Waste Cardboard	0.6

## Water Recycling system - Dual Plumbing Layout





<b>B</b>		<b>Water Efficiency</b>		
Sr. No.	Points	Standards	current	Remark/ Required
1	Rainwater Harvesting	Campus is served with a bore well, ground water recharge pits for rain water harvesting		
2	Water consumption per day	81, 000 / day	80, 000/ day	Water consumption is low as compared with standards.
		45 lit/ head	39 lit/ head	
		Permissible Water consumption per day	Achieved water consumption per day	

<b>Water Usage</b>	
Overhead water tank (for toilets and other use)	60, 000.00
Overhead water tank (for Drinking Water)	10,500.0
Underground water tank (for toilets and other use)	80, 000.00
underground water tank (for Drinking Water)	25,000.00
<b>Total</b>	<b>1,75,500.00</b>

Number of students:- around 1700  
Number of Faculties:- 50+50  
Total number of Users Per day - 1800  
As per standards average water consumption per person in institute is 45 lit/ person

## **Water Consumption & Distribution Report of MIT Arts Commerce & Science College, Alandi Campus**

The Institute premises of MIT Arts Commerce & Science College (MITACSC) Alandi (D) Comprises of Academic & Administrative Building of Ground + 03 floors & parking in basement.

### **•Source of Water:**

- Water line connection from Nagar Parishad
- Bore wells in premises
- R. O. water for potable/ drinking purpose

### **•Storage:**

- Underground water tank (UGWT) of 1.25 lakh litre capacity
- Domestic water 80,000 litres
- Treated water 25000 litres
- Fire tank 26000 litres

UGWT stores water from Nagar Parishad connection & Bore Well water.

- Overhead Water Tank : Sintex tanks 03 numbers of 5000 litre capacity each to store water for flushing & wash areas
- Water dispensers at all levels to cater for drinking R. O. water at all floors.
- Irrigation system as a plumbing line network for landscapes and gardening.

### **•Water Conservation Systems:**

- All terrace Rainwater is channeled to road side storm water drain lines.
- Rain Water Harvesting - Rain Water Harvesting pits provided within the path way of storm water lines at ground level. These Rain Water Harvesting pits recharge ground water and also drain excess in soak pits to recharge for Bore wells.
- All Ground slopes are maintained to drain Rain Water into Rain Water Harvesting Recharge pits- Green Initiative.
- The excess storm water if any from premises is connected and drained in nearby river by storm water line.

### **•Drainage System:**

- All Drainage lines are connected to underground Septic Tank for primary treatment.
  - The overflow from Septic Tank is then connected to discharge into the Nagar Parishad Drainage lines.
- The Institute has taken all possible measures to conserve water by minimizing wastage of water and also recharging ground water level by Rain Water Harvesting to avoid surface flow and wastage. Proper drainage lines with primary treatment by septic tank and then discharging into Nagar Parishad drains also avoids contamination of ground water & brings general well being of premises.



<b>B</b>		<b>Water Efficiency</b>	
Sr. No.	Points	current	Remark/ Required
3	Water Efficient Plumbing Fixtures	Provided	As prescribed in water calculation over all water consumption in low.
4	Waste water management	64, 800 lits	Septic tank is Provided




7.1.4

## Environmental Consciousness and Sustainability

Water conservation facilities available in the Institution

1. Rainwater harvesting
2. Bore well recharge – recharge pit



7	Rainwater harvesting	<ul style="list-style-type: none"><li>• Recharge pits for rain water harvesting for ground water recharge are provide along with storm water drain.</li></ul>	
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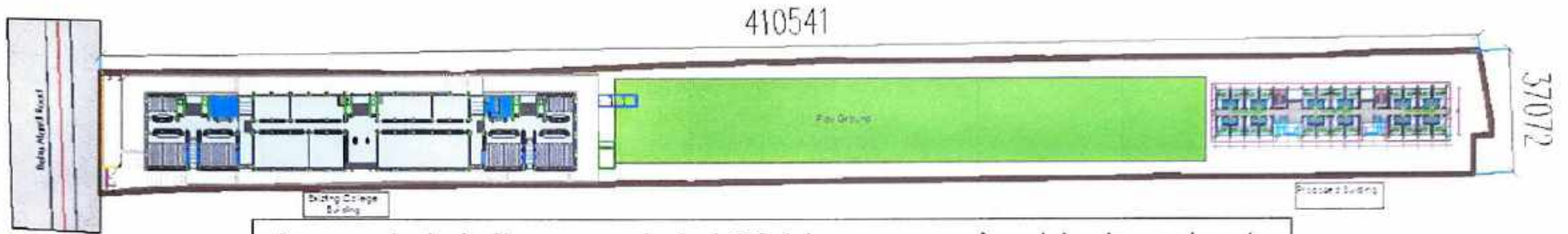
7.1.4

## Environmental Consciousness and Sustainability

Green campus initiatives include

1. Ban on use of plastic – Policy paper is attached
2. Landscaping with trees and plants – details on next slide





As per total site area total 184 trees required to be plant.

**Existing trees on site -**

- Phycus tree – 70 trees
- Badam – 1 tree
- Chafa – 1 tree
- Suru – 6 tree
- Umbar – 1 tree
- Pimple – 1 tree

Total – 90 trees  
already planted  
on site



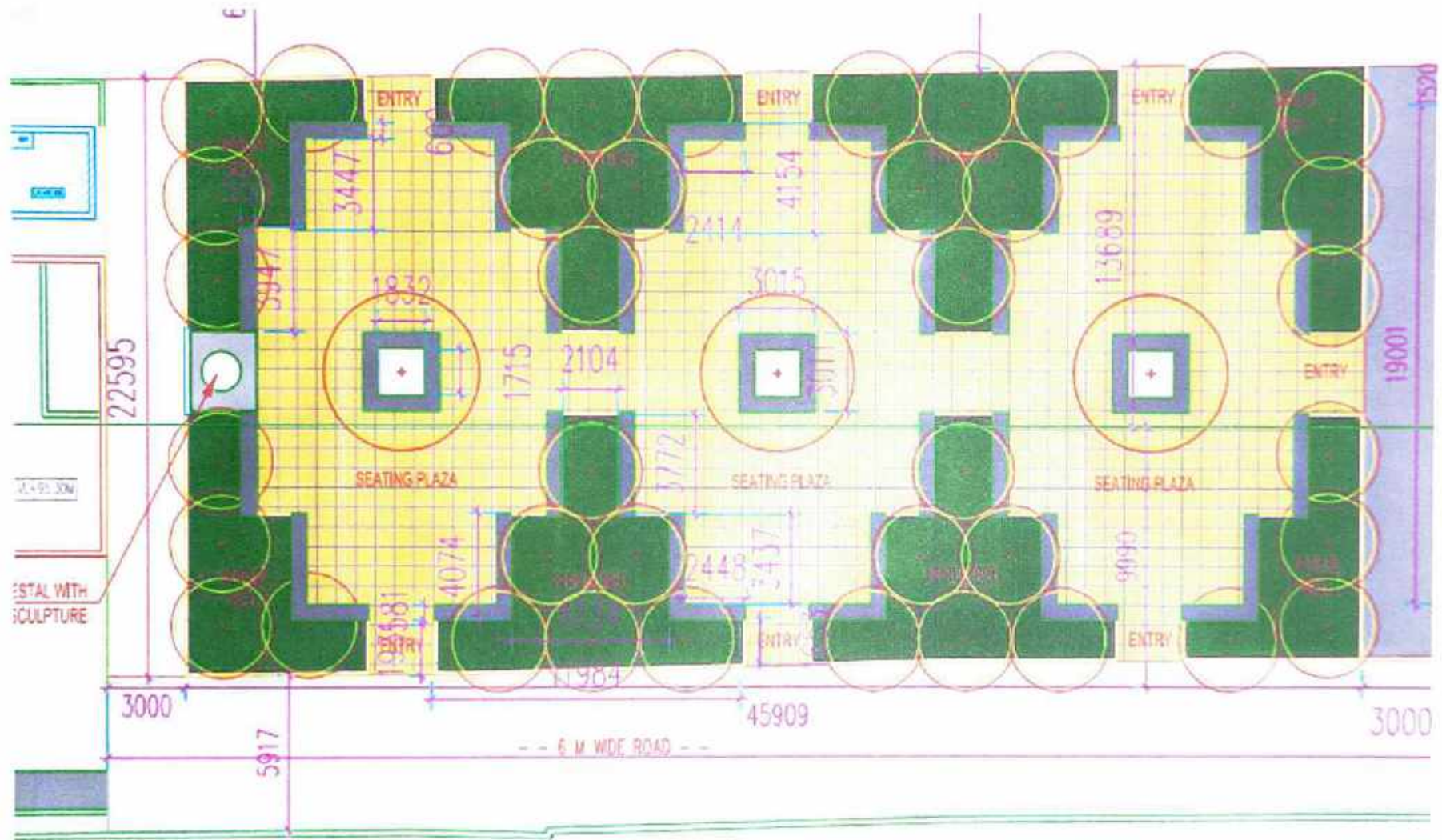


Newly Planted  
trees on Site  
Total 155





# New Plantation layout and plant list



Quotation ordered for  
new plantation

## SHRI SAI LANDSCAPERS

Om Sai S no 45/1 baliraj colony Rahatani Pimpri Pune 17

Mo.9822507213 8551037171

Date : 09/12/2019

### PLANTS QUOTATION TREES

No	Description	Length	Quantity	Rate per plant	Total
1	Bakul	10-12 ft	10	950.00	
2	Cassia fistula	10-12 ft	04	1050.00	
3	Khaya	10-12 ft	03	1050.00	
4	Bauhinia Blakema	10-12 ft	12	1050.00	
5	Pongamia Glabra	10-12 ft	04	950.00	
6	Lagerstroemia Flos Regina	10-12 ft	10	1000.00	
<b>SHRUBS</b>					
7	PlumbagoCapensis	0.45M c/c	340	15.00	
8	Mayna Erecta	0.45M c/c	310	15.00	
9	Dianella Grass	0.23M c/c	490	22.00	
10	Hemelia Pentas	0.30M c/c	100	15.00	
11	Spider Lily	0.30M c/c	1310	15.00	
12	Tagar Single	0.45M c/c	310	18.00	
Note=Transport Charges Extra					
50% Advance with purchase order Balance payment 10 days After delivery					



7.1.6

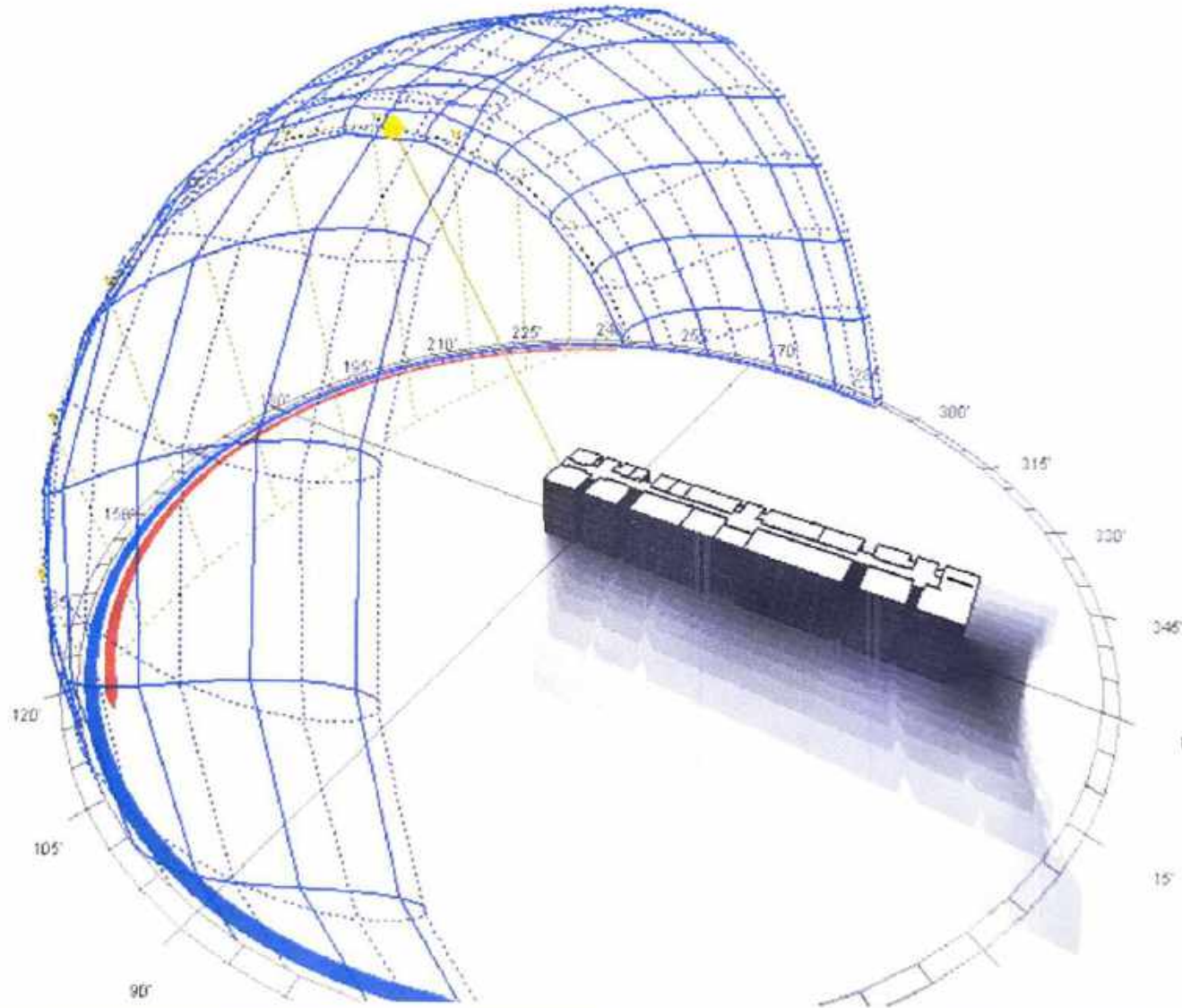
## Environmental Consciousness and Sustainability

Green Audit

Energy Audit

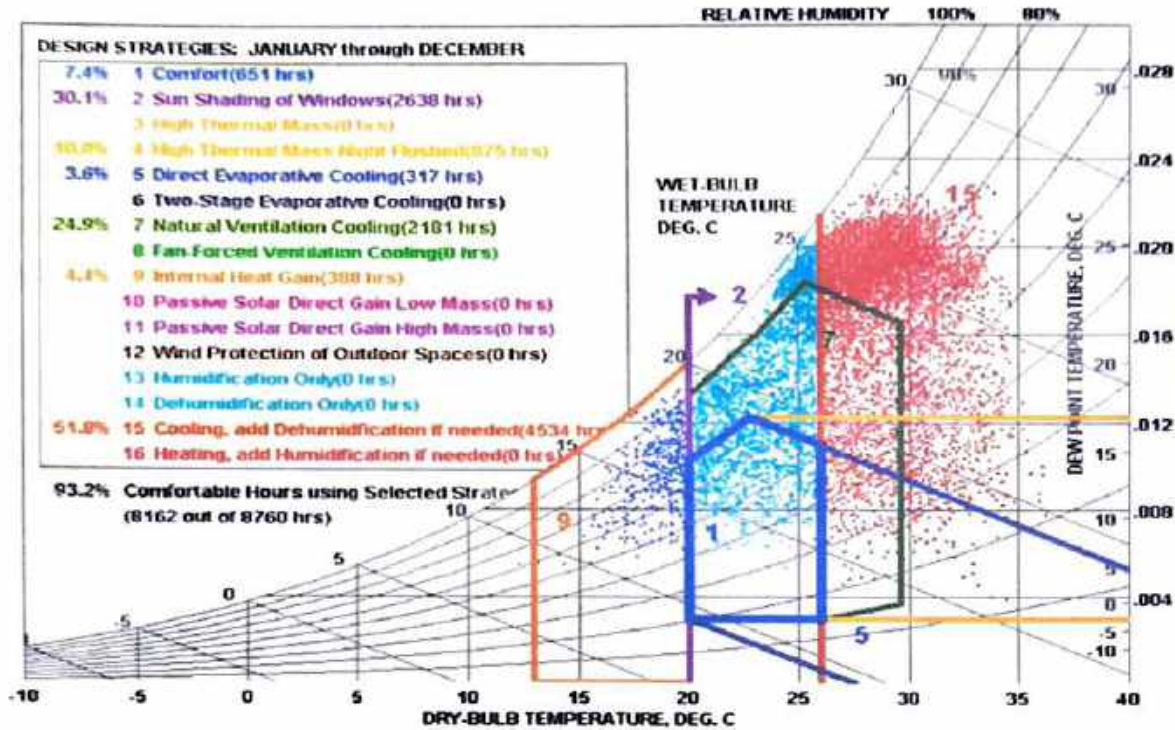
Environment Audit

# Indoor Environmental Quality and Building Simulation





# Climate Analysis



Psychrometric Chart above explains that, no other strategy is effective for passive comfort except Solar Shading & Natural Ventilation.

- Strategies like direct evaporative cooling, internal heat gain and High thermal mass are also effective, but for a lesser period.
- Around 30% of total comfort hours can be achieved by Sun Shading.
- Around 27% of total comfort hours can be achieved by Natural Ventilation.
- From all the above strategies around 50% of total comfort hours can be achieved by Sun Shading and Natural Ventilation & for the rest 50% of the time air conditioning may be required. For this analysis, the Comfort Criterion was set at 22 to 26 degree C for dry bulb temperature & relative humidity to 70%.

The Psychrometric Chart above confirms that the four effective strategies are Shading, Ventilation, Internal heat gain and Evaporative cooling. The graph plot on next page shows the degree difference between the Dry Bulb Temperature & Relative Humidity. As per the legend, at least 30% of the total hours are in comfort range with an effective wind speed of 3 to 5 m/s. Fan forced ventilation is also an effective strategy during monsoon period.

Three courtyards in building are providing sufficient day-light and ventilation to adjacent corridors and class rooms.

It enforces stack effect through out building, which provides sufficient amount of air changes per hour from every room, And helps to maintain comfort zone.



COURTYARD 1



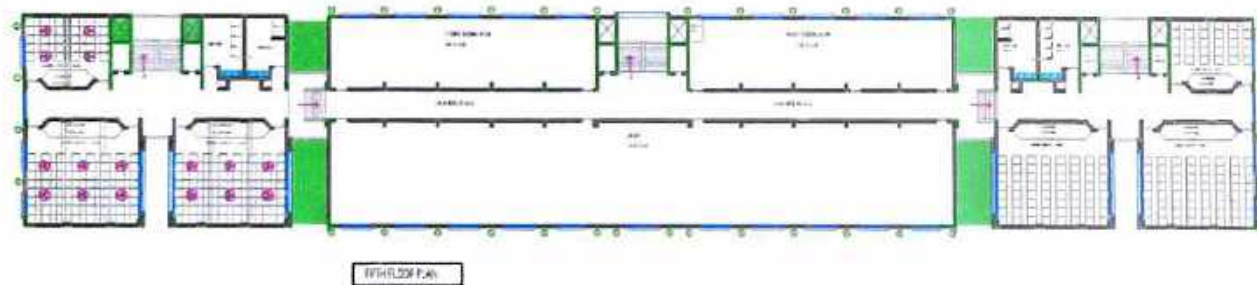
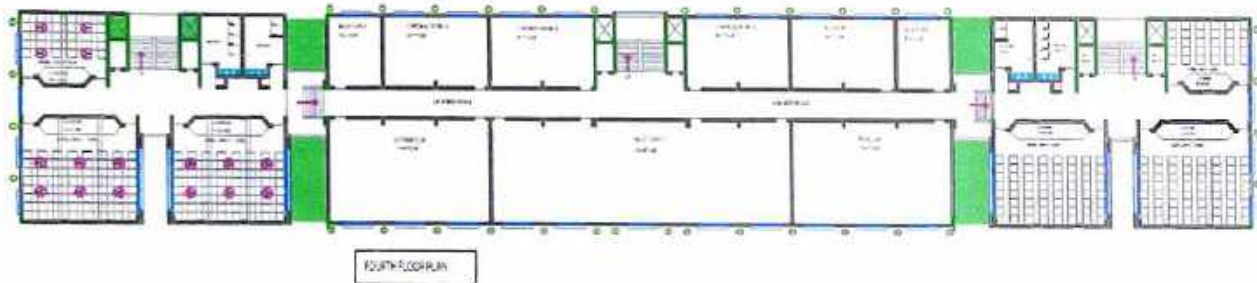
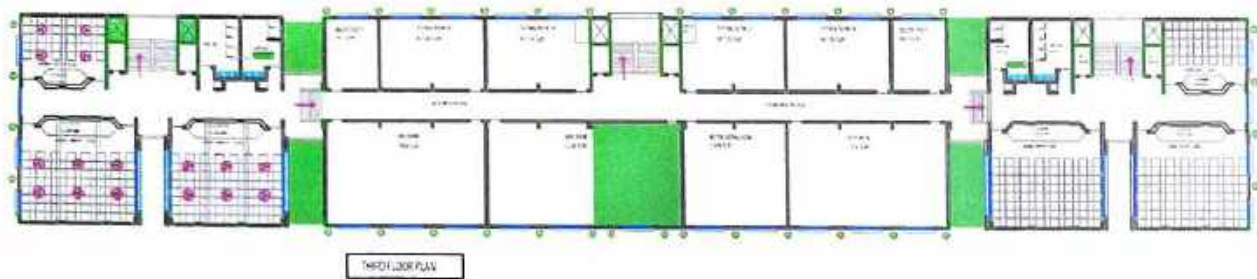
COURTYARD 2



COURTYARD 3



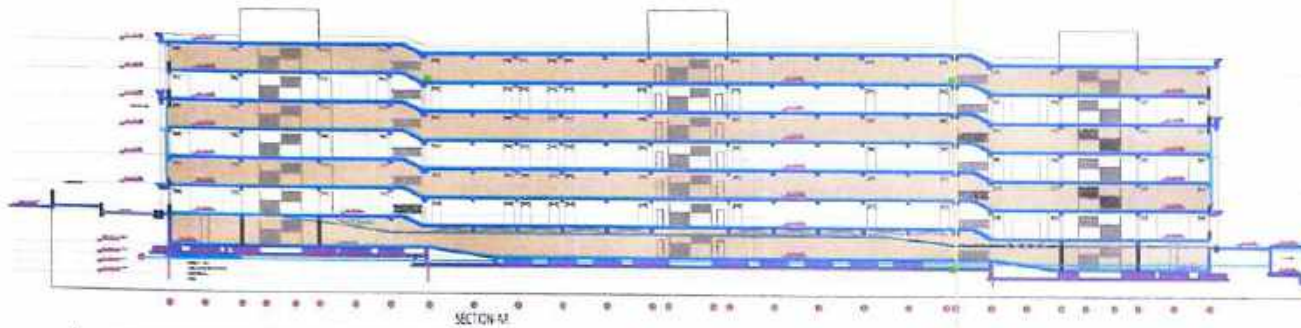




Three courtyards in building are providing sufficient day-light and ventilation to adjacent corridors and class rooms.



Sufficient day light penetration in corridor reduce artificial lighting-effectively reduction in use of electricity





Site Section – Building design and Site Development is w.r.t. land profile reduces unnecessary cutting filling of land.


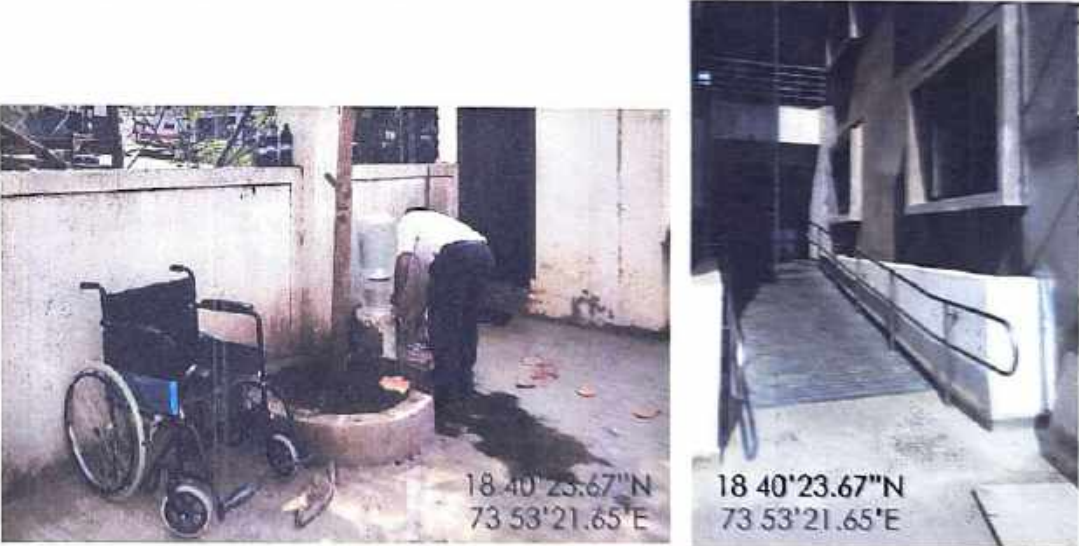


Basement Parking with daylight penetration and natural ventilators to exhaust smoke.







Sr. No.	Points	Requirements as per standards and Facts on location	Remark/ Required
<b>A Site Planning</b>			
1	<b>Soil Erosion Control</b>	<ul style="list-style-type: none"> <li>• To control soil erosion concrete paving blocs are used.</li> <li>• Pavers blocks are also endorse ground water seepage.</li> <li>• Plantation is needs to be done along compound wall</li> </ul>	
2	<b>Landscape</b>	<ul style="list-style-type: none"> <li>• 3 courtyards are formed in between building, and are planted with various species .</li> <li>• 1 tree for every 80 SQ M open area are required to plant on site.</li> <li>• 185 trees need be plant through out site</li> </ul>	<ul style="list-style-type: none"> <li>• Prescribed number of trees are available on site.</li> </ul> 

4	Parking Facilities	<ul style="list-style-type: none"> <li>Underground parking is provided as per Requirements and prescribed in bylaws.</li> </ul>	
6	Design for Differently Able	<ul style="list-style-type: none"> <li>Lift is provided from stilt parking to every floor. Wheelchair accessibility is maintain through ramps and lifts are provided on every floor.</li> </ul>	



<b>D</b>				
<b>Indoor Environmental Quality</b>				
Sr. No.	Points	Standards	current	
	<b>Daylighting levels (LUX)</b>			
1	Class rooms	200-300	400 (South side Class rooms)  268 (East side Class rooms)  171 (North side Class rooms)	

3	Computer Lab	300-500		
			Average value of day light is 200	
4	Library	200-300	 <p data-bbox="1361 1185 1559 1255">18 40'23.67"N 73 53'21.65"E</p>	
			Average value of day light is 200	



5	Laboratories	300-500	400	Average Value as per standards
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## WWR- Wall to window area ratio

Optimum WWR as per ECBC norms - averagely which is under 30%. It helps to reduce heat gain.

As per Building orientation Limited WWR additionally with appropriate fenestration design is done on East -West direction to avoid direct light and also reduce heat gain.

Building	Vertical Fenestration Type window Nomenclature)	No of Window	LENGTH	HEIGHT	Window Area	Total Window Area	Sum of Window Area	Wall Area	WWR
			M	M	SQ M	SQ M	SQ M	SQ M	%
EAST/ WEST	W1	30	2.40	2.40	5.76	172.80	208.80	1434.07	15%
	W	12	1.25	2.40	3.00	36.00			
NORTH/ SOUTH	W1	12	3.00	2.40	7.20	86.40	86.40	269.03	32%

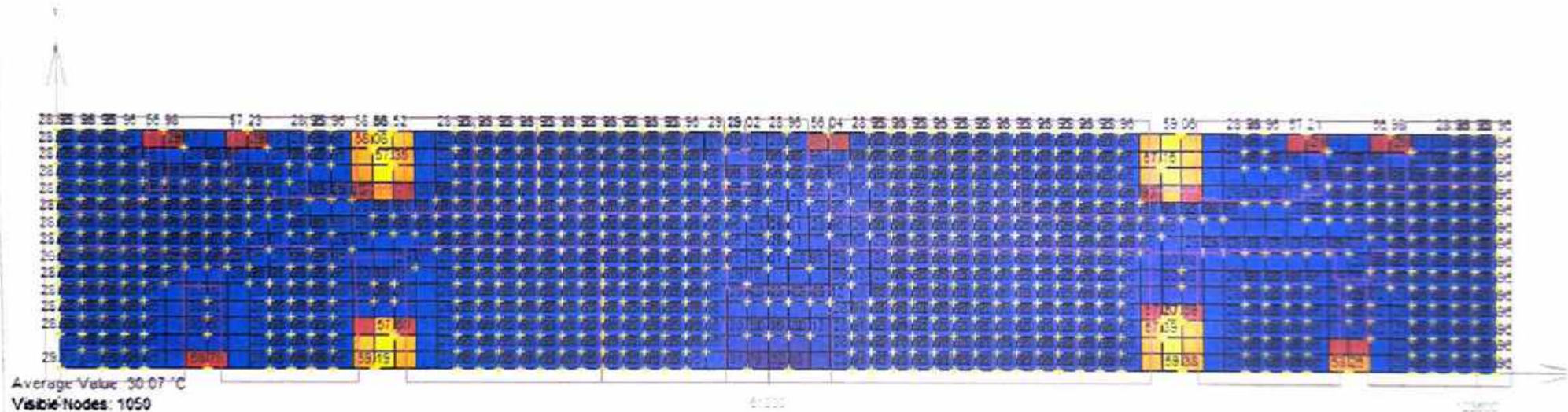




## E. Thermal Analysis

### Thermal Comfort

Mean Radiant Temp  
Value Range: 28.0 - 48.0 °C  
© ECOTECT v8



Maximum areas from the building are comes under comfort zone. Average value of comfort zone is 24 to 27 c .  
Average value of comfort zone of Dhruv building is 26.63 c.

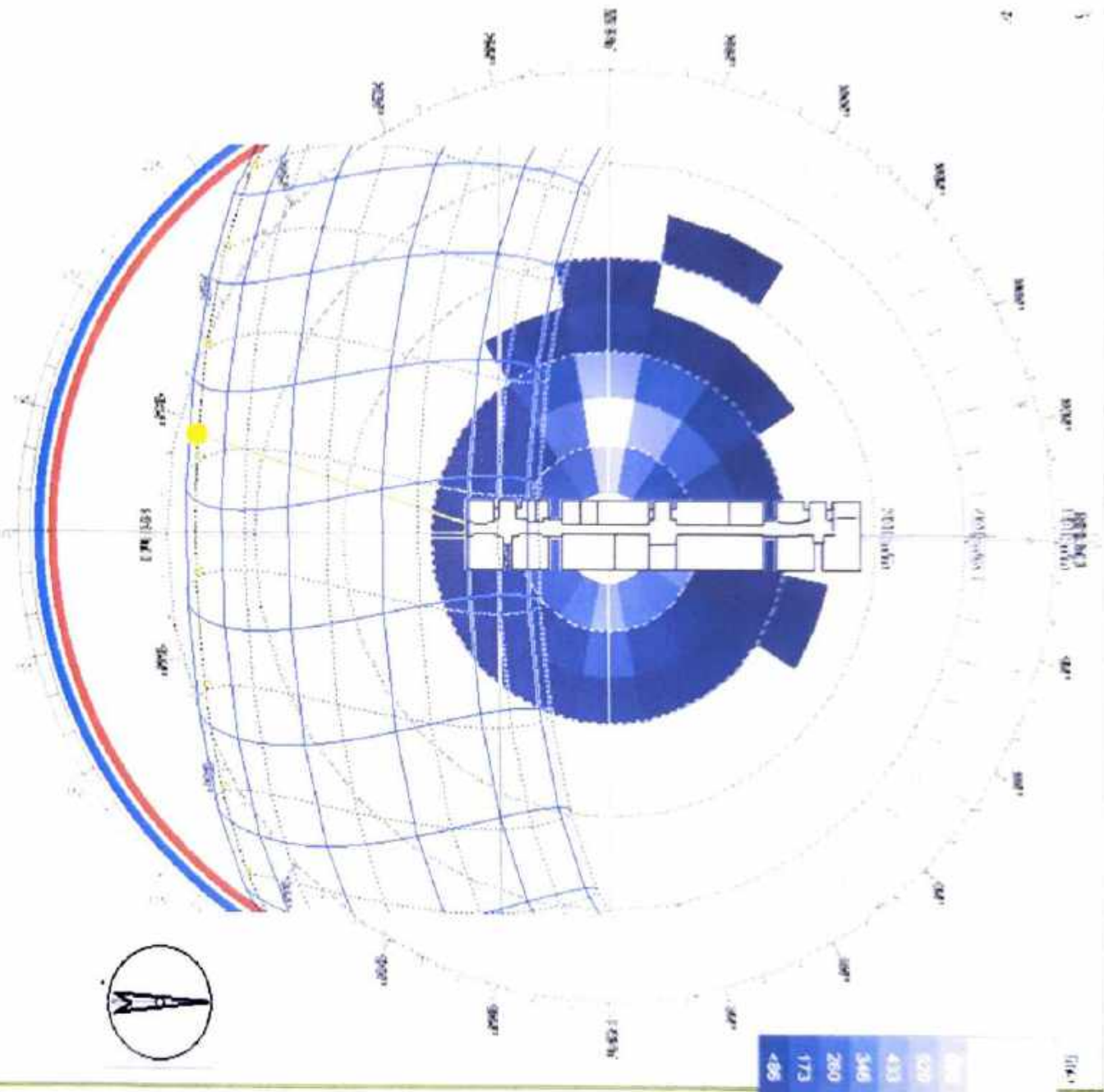
## Exterior Wind Analysis

The Wind analysis shows that the building layout corresponds to the prevailing wind direction. The prevailing wind direction is west.

The average wind speed is 20kmph.

The layout is such that it allows the wind flow to all the floor plats of the building.




The windows, in-between pockets and placement of staircase is on waste side which enhance the airflow in the building.





## Natural Ventilation

Regularly Occupies Spaces	Floor Area	Area of Windows	Percentage of Window Openings	Openable window area	Percentage of Openable area	Recommended percent
	SQ M	SQ M	%	SQ M		
Class room Type 1	121.81	25.92	75	19.44	16%	10%
Lab	182.10	28.80	75	21.60	12%	10%
Faculty office	118.46	19.20	75	14.40	12%	10%

F		Energy Efficiency	
Sr. No.	Points	current	
1	Minimum Energy Performance	Because of sufficient amount of day light is available and maximum areas are come under comfort zone at maximum time of year there is hardly need to use artificial light and mechanical ventilation system.	
2	Daylight	Sufficient amount of defused daylight is penetrated in class rooms, no need to use light fixtures during daytime	
3	Energy saving Measures in other Appliances and Equipments	All lighting fixtures are LED. Purchase order is attached.	





**Green Audit - MIT Arts, Commerce & Science Collège, Alandi**  
Dehu Phata, Alandi (D), Tal. Khed, Pune, Maharashtra - 412105

Ar. Bilwa Deo, IGBC LEED AP



7.1.7

## Environmental Consciousness and Sustainability

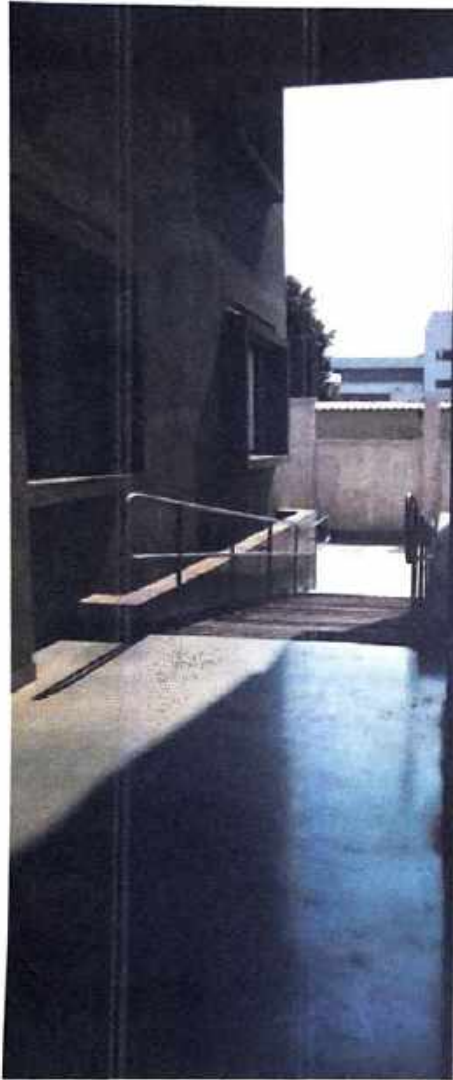
Institution has disable friendly, barrier free environment

1. Built environment with ramps/ lifts for easy access to classrooms
2. Signage including tactile path, lights, display boards and signpost.



Built environment with ramps/ lifts for easy access to classrooms

Lift is provided from stilt parking to every floor. Wheelchair accessibility is maintain through ramps and lifts are provided on every floor.



## Attachments

1. MOU with MPCB approved agency for E-Waste collection.
2. Undertaking from 7 Greens solar systems Pvt. Ltd for installation of solar PVs
3. Notice placed for plastic ban in college

Thank You





SEVEN GREENS SOLAR SYSTEMS PVT. LTD.

Merging Green technologies.

20.06.2019

To,  
MIT ACS College  
Alandi ,Pune

**Subject: Work Completion report for 13.44 kw Solar Power Project**

This is to certify that M/S Seven Greens Solar Systems Pvt. Ltd. having registered office at 33/34, Bldg No. 1, Ram CHS, Ram Mandir road, Kherwadi, Bandra East Mumbai 400055 have satisfactorily completed the following work as per details given below

**Name of work – Supply, Installation, Testing and Commissioning of 13.44 kw Solar Plant System.  
Purchase Order Number -802-(1-19)MIT ACSC Voucher No 127 dated 21st Feb 2019  
Capacity –13.44 kw**

The work has come very well and validation of the project has been well within the guidelines prescribed as you might have observed.

We hereby would like to handover the facility to you through this formal letter. Request your kind acknowledgement of this letter

Thanks & Regards

Authorised Signatory

For Seven Greens Solar Systems Pvt. Ltd.



T H A N K Y O U

