Ar. Bilwa Deo, IGBC LEED AP IGBC AP

Architect and Landscape designer

To whom so ever it may concern

Date: 01.01.2023

Energy Audit at **MAEER'S MIT Saint Dnyaneshwar B.Ed. Collège, Alandi Devachi, Pune** is been successfully conducted in Jan 2023 with respect to following parameters.

Environmental Consciousness and Sustainability

- Waste management - Solid waste management, E- waste management and Waste recycling
- Water conservation and Rain water harvesting
- Green campus initiatives
- Solar Passive architecture with day light analysis and natural ventilation.
- Barrier free environment for specially able person.

Content to state Green Audit of MAEER'S MIT Saint Dnyaneshwar B.Ed. Collège, Alandi Devachi, Pune successfully comply all parameters as mentioned above.

Deo Consultant NBQP/QCI-SCE79001 Environmental Clearance

SunRachana | Address: Sector No. 27, Plot No 10/b, P.C.N.T., Pune 411044 Mob: 9730034708
Email: deo.billwa@gmail.com Reg. No: CA/2008, 42882

CamScanner

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Date: 01.01.2023

Energy Audit at **MAEER'S MIT Saint Dnyaneshwar B.Ed. Collège, Alandi Devachi, Pune** is been successfully conducted in Jan 2023 with respect to following parameters.

Environmental Consciousness and Sustainability

- Plantation of Native trees
- Green landscape initiatives to reduce Urban heat island effect

Content to state Green Audit of MAEER'S MIT Saint Dnyaneshwar B.Ed. Collège, Alandi Devachi, Pune successfully comply all parameters as mentioned above.

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Energy Audit at **MAEER'S MIT Saint Dnyaneshwar B.Ed. Collège, Alandi Devachi, Pune** is been successfully conducted in Jan 2023 with respect to following parameters.

Environmental Consciousness and Sustainability

- Use of renewable energy
- Energy saving fixtures.
- Solar Passive strategies to reduce overall energy consumption

Content to state Green Audit of MAEER'S MIT Saint Dnyaneshwar B.Ed. Collège, Alandi Devachi, Pune successfully comply all parameters as mentioned above.

Deo Consultant NBQP/QCI-SCE79001 Environmental Clearance

SunRachana | Address: Sector No. 27, Plot No 10/b, P.C.N.T., Pune 411044 Mob: 9730034708
Email: deo.billwa@gmail.com Reg. No: CA/2008, 42882

CamScanner

Green Audit – **MAEER'S MIT Saint Dnyaneshwar B.Ed. Collège, Alandi Devachi Pune**

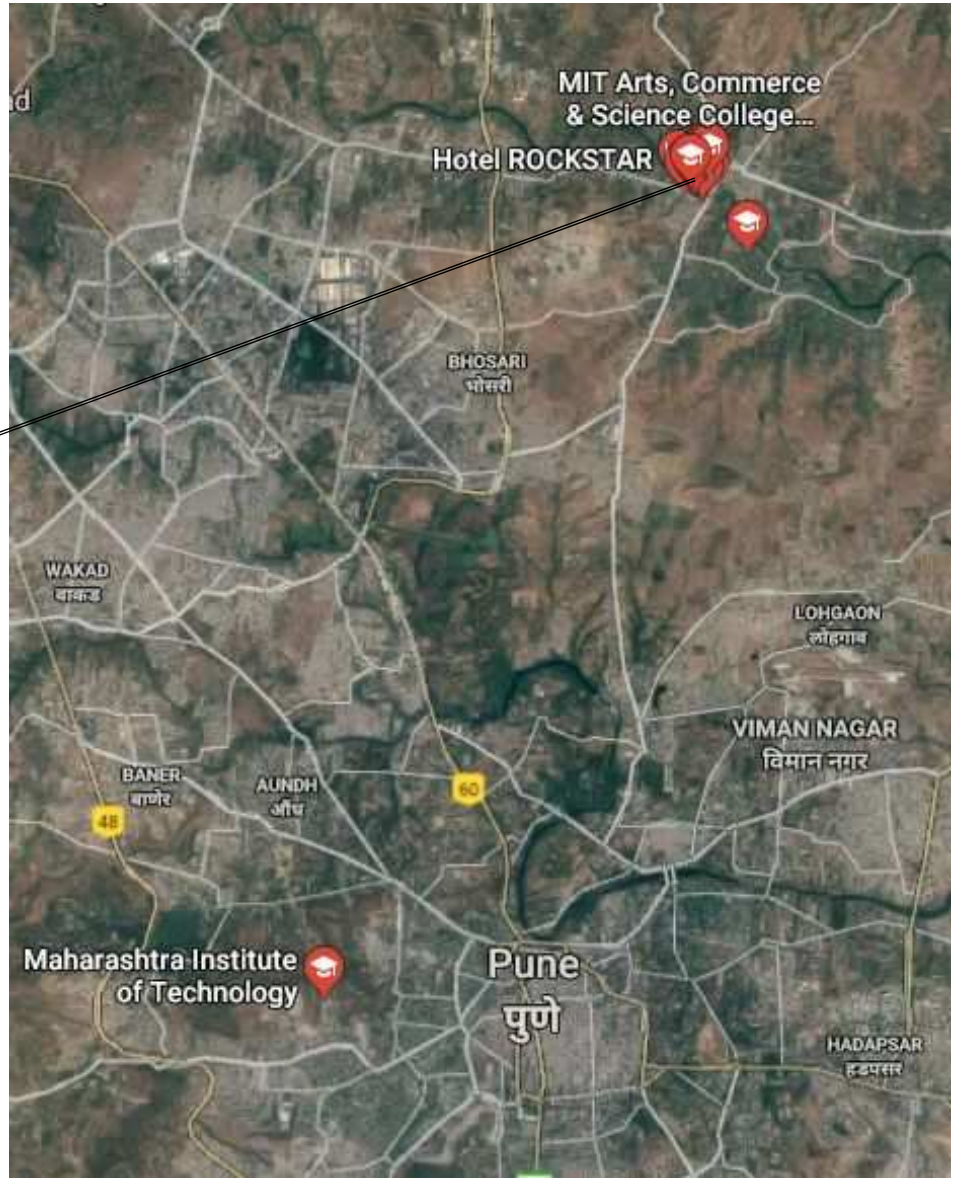
Dehu Phata, Alandi (D), Tal. Khed, Pune, Maharashtra - 412105

Date: Jan 2023

Compiled by-
Ar. Bilwa Deo

Contents

Project Information	
Name of Project	**MAEER'S MIT Saint Dnyaneshwar B.Ed. Collège, Alandi Devachi Pune**
Location	Alandi Devachi Pune
Project category	Institute Building
Stage of Project	Occupied

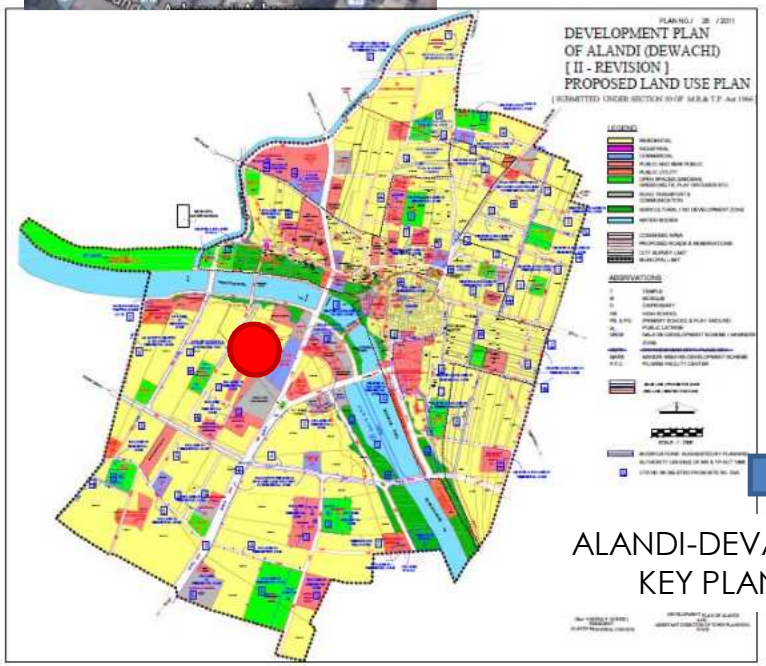


Local Building Regulations -	Are followed as per Alandi-Devachi Development Plan

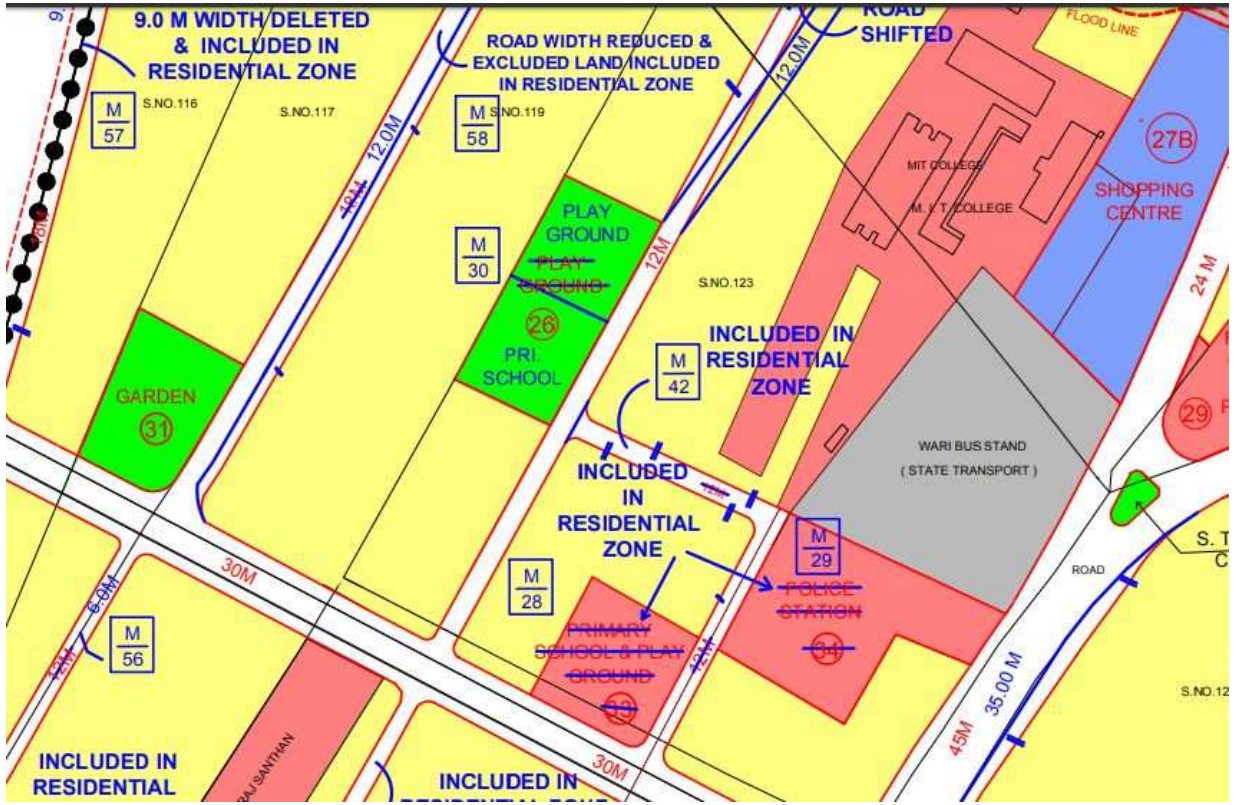
MAEER'S MIT Saint Dnyaneshwar B.Ed. Collège, Alandi Devachi Pune

Play Ground

College building



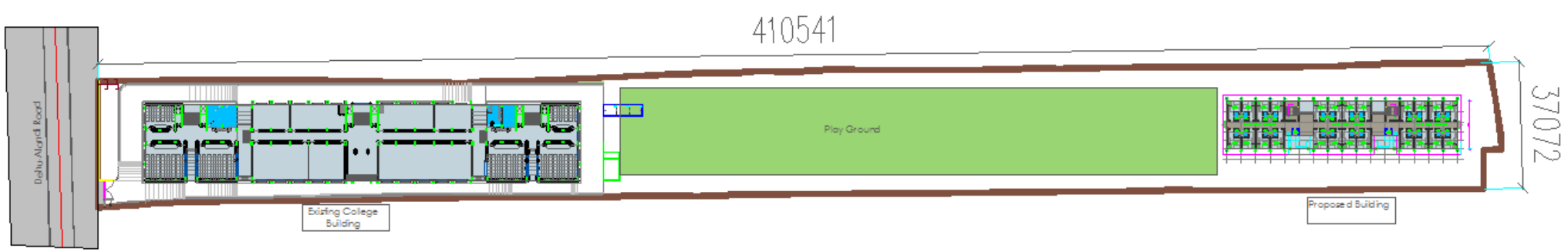
ALANDI-DEVACHI, KEY PLAN



Development plan Alandi -Devachi showing **MAEER'S MIT Saint Dnyaneshwar B.Ed. Collège, Alandi Devachi Pune** located in land allotted for public purpose, where schools and college are permitted to occupied.

N

MAEER'S MIT Saint Dnyaneshwar B.Ed. Collège, Alandi Devachi Pune



Site Plan

N

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	

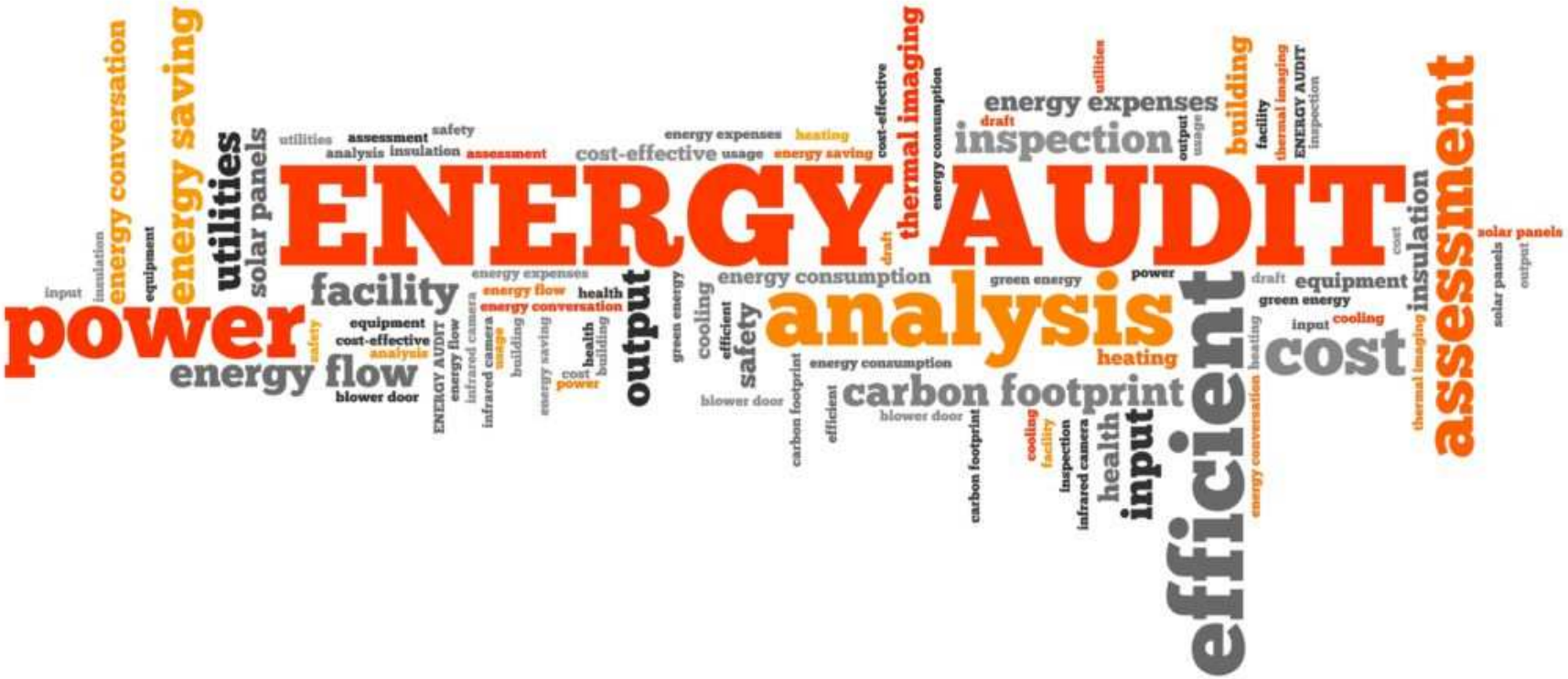
MAEER'S MIT Saint Dnyaneshwar B.Ed. Collège, Alandi Devachi Pune

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

N

Total Number of Occupants	1800.00
Number of Operational Days	300.00

Energy Audit



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

Solar Energy - Grid Connected

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

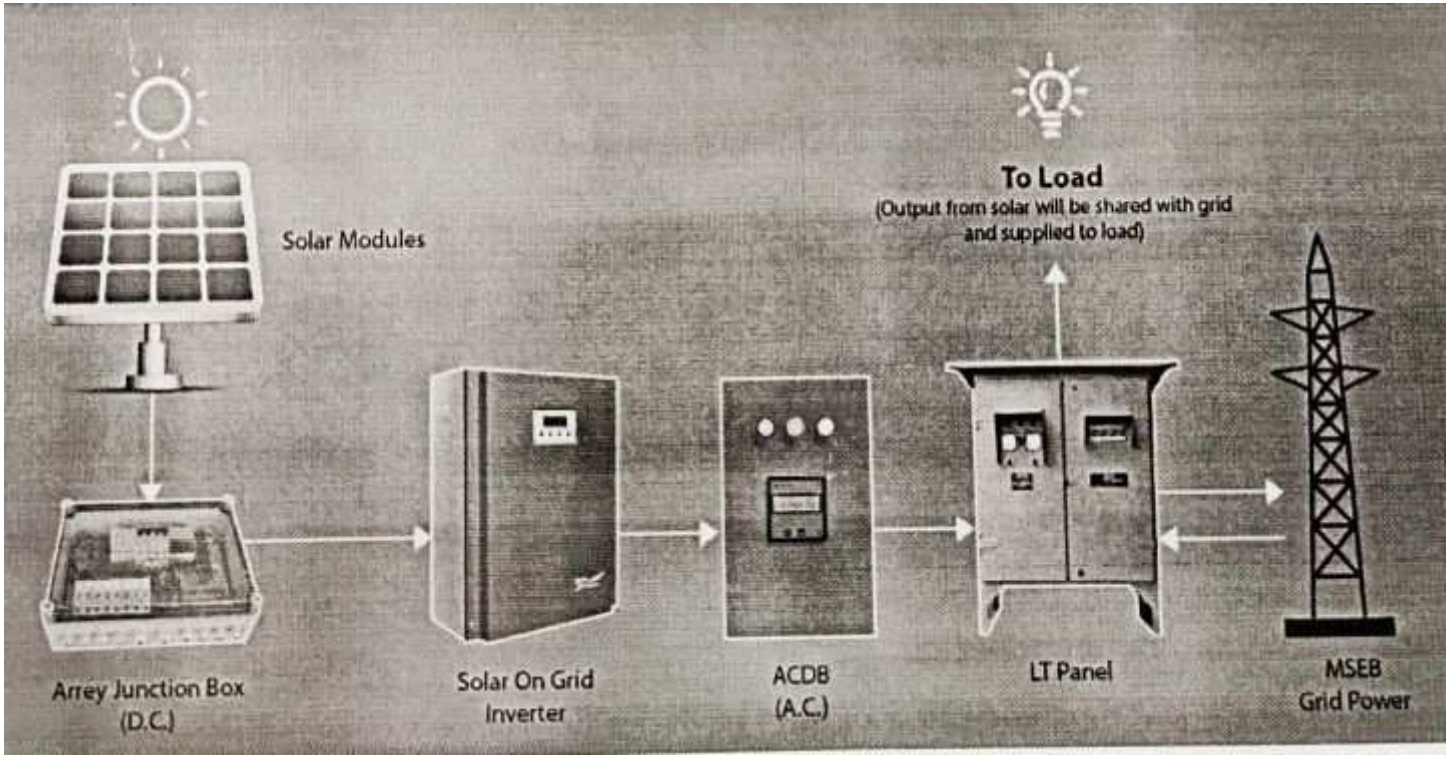
Solar PV installation done from August 2019

Month	Air temperature (°C)	Daily solar radiation (kWh/m²/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
Annual	24.7	5.44

Year 2022		Year 2023			
Month	Units	Month	Units		
22-Jan	12,662	23-Jan	8,804	3, 858	unit saving
22-Feb	12,910	23-Feb	8,826	4,084	unit saving
22-Mar	20,934	23-Mar	13,292	7,642	unit saving
22-Apr	26,740	23-Apr	19,180	7,560	unit saving
22-May	31,962	23-May	25,636	6,326	unit saving
22-Jun	23,754	23-Jun	20,324	3,430	unit saving
22-Jul	21,406	23-Jul	12,966	8,440	unit saving
22-Aug	27,998	23-Aug	12,938	15,060	unit saving
22-Sep	28,970	23-Sep	17,798	11,172	unit saving
22-Oct	31,226	23-Oct	15,042	16,184	unit saving
22-Nov	15,752	23-Nov	16,762		
22-Dec		23-Dec	17,812		

Solar Energy - Grid Connected

Wheeling to the grid



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

Purchas order is attached

8

Use of LED bulbs/ Power efficient equipments

18 40’23.67”N
73 53’21.65’E

Environmental Audit

7.1.3

Environmental Consciousness and Sustainability

The facilities in the institution for the management of the following types of degradable and no 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

College Canteen waste Wet waste

College Garden Waste

College E-Waste

College Paper waste

College Canteen dry waste

Compost pit

Collected through different bins and use in warm compost

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).

18 40’23.67”N 73 53’21.65’E

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

Solid waste management

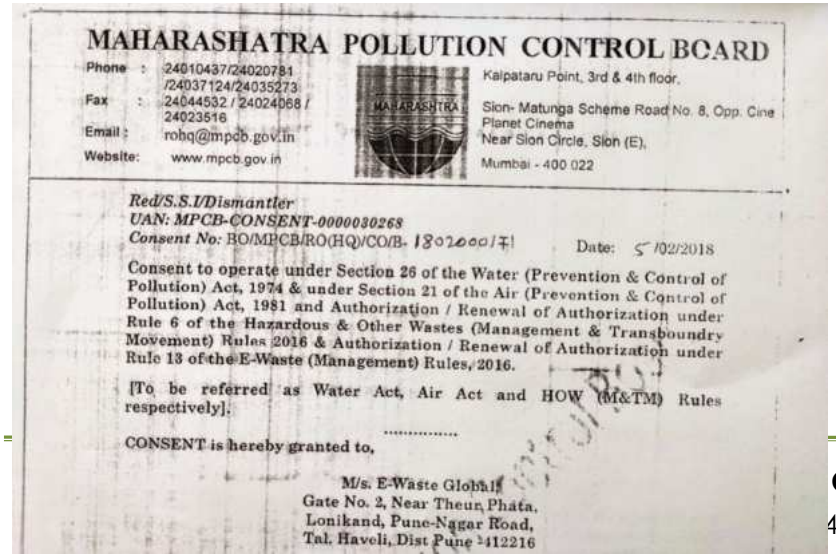
1. Solid waste management

Waste segregation is happened on daily basis like listed below

- College Canteen waste Wet waste
- College Garden Waste
- College E-Waste
- College Paper waste
- College Canteen dry waste

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 : 24010437/24020781 /24037124/24035273
Fax : 24044532 / 24024068 / 24023516
Email : rohq@mpcb.gov.in
Website: www.mpcb.gov.in

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

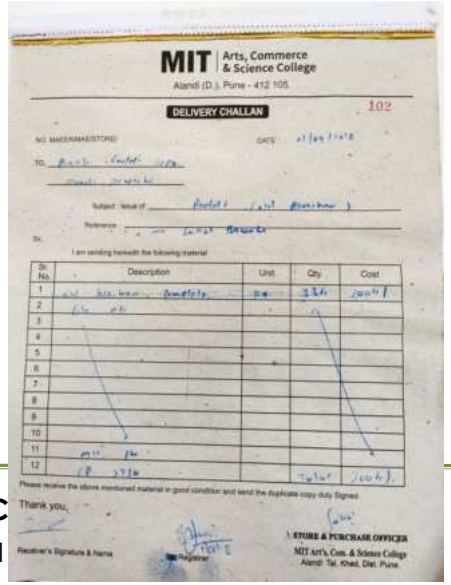
Red/S.S.I/Dismantler
UAN: MPCB-CONSENT-0000030268
Consent No: RO/MPCB/RO(HQ)/CO/B- 1802000171 Date: 5/02/2018

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 & Transboundry Movement) Rules 2016 & Authorization / Renewal of Authorization under Rule 13 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 Global I
Gate No. 2, Near Theur Phata,
Lonikand, Pune-Nagar Road,
Tal. Haveli, Dist Pune 412216



MIT Arts, Commerce & Science College
Alandi (D.), Pune - 412 105.

DELIVERY CHALLAN

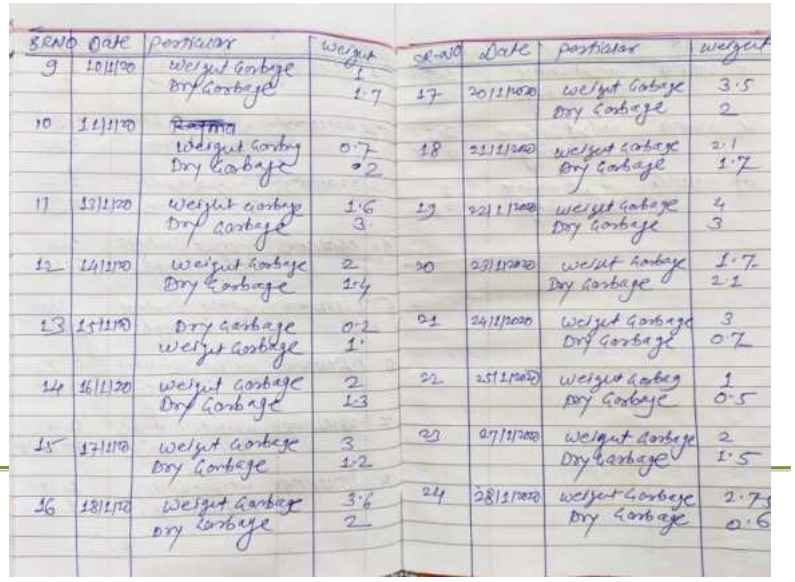
102

Sr. No.	Description	Unit	Qty	Cost
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				

Thank you.

Receiver's Signature & Name

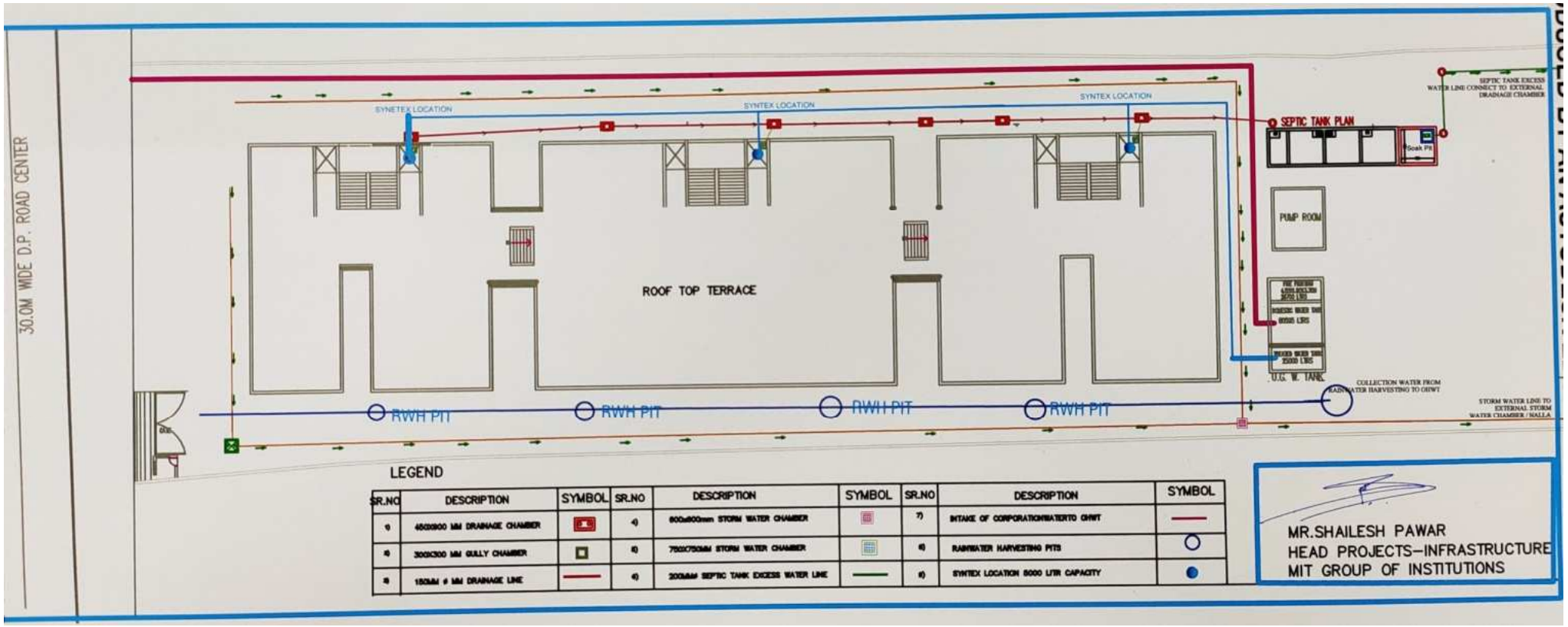
STORE & PURCHASE OFFICER
MIT Art's, Com. & Science College
Alandi Tal. Khed, Dist. Pune.



SR NO	Date	particular	weight
9	10/1/20	Weight Garbage	1·7
		Dry Garbage	
10	11/1/20	~~Rajma~~	
		Weight Garbage	0·7
		Dry Garbage	2
11	13/1/20	Weight Garbage	1·6
		Dry Garbage	3
12	14/1/20	Weight Garbage	2
		Dry Garbage	1·4
13	15/1/20	Dry Garbage	0·2
		Weight Garbage	1
14	16/1/20	Weight Garbage	2
		Dry Garbage	1·3
15	17/1/20	Weight Garbage	3
		Dry Garbage	1·2
16	18/1/20	Weight Garbage	3·6
		Dry Garbage	2

SR NO	Date	particular	weight
17	20/1/2020	Weight Garbage	3·5
		Dry Garbage	2
18	21/1/2020	Weight Garbage	2·1
		Dry Garbage	1·7
19	22/1/2020	Weight Garbage	4
		Dry Garbage	3
20	23/1/2020	Weight Garbage	1·7
		Dry Garbage	2·1
21	24/1/2020	Weight Garbage	3
		Dry Garbage	0·7
22	25/1/2020	Weight Garbage	1
		Dry Garbage	0·5
23	27/1/2020	Weight Garbage	2
		Dry Garbage	1·5
24	28/1/2020	Weight Garbage	2·7
		Dry Garbage	0·6

Water Recycling system - Dual Plumbing Layout



B	Water Efficiency			
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	

Water Usage	
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
Total	**1,75,500.00**

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 MAEER'S MIT Saint Dnyaneshwar B.Ed. Collège, Alandi Devachi Pune

The Institute premises of **MAEER'S MIT Saint Dnyaneshwar B.Ed. Collège, Alandi Devachi Pune** 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	Water Efficiency		
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

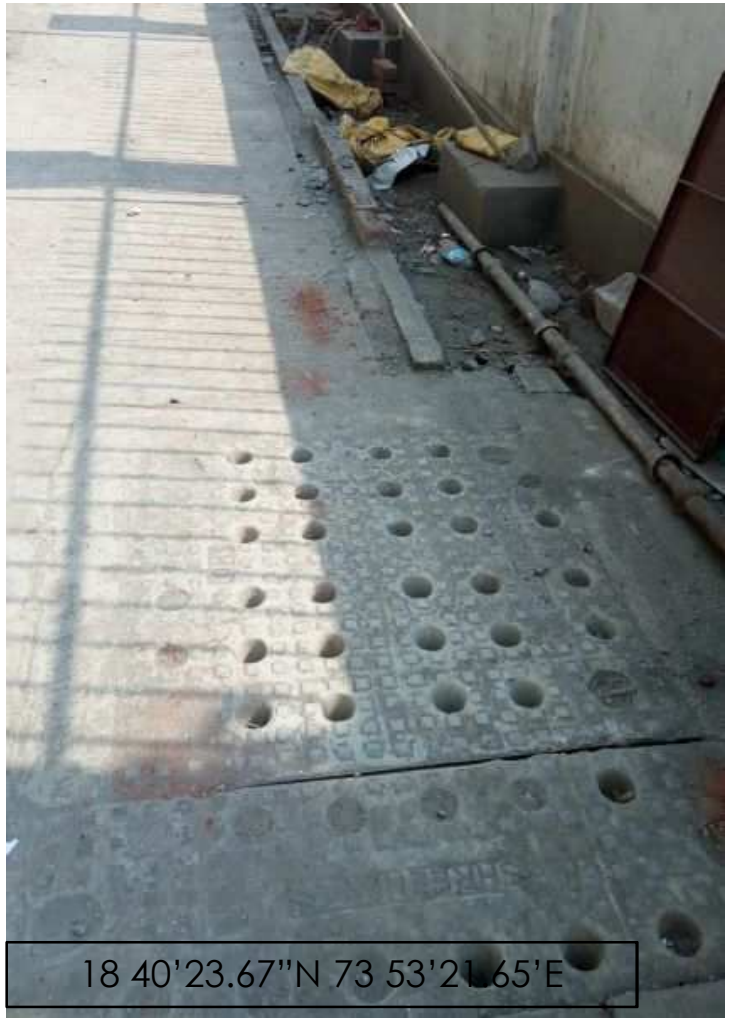
7.1.4

Environmental Consciousness and Sustainability

Water conservation facilities available in the Institution

1. Rainwater harvesting

2. Bore well recharge – recharge pit

7	Rainwater harvesting	• Recharge pits for rain water harvesting for ground water recharge are provide along with storm water drain.	

7.1.6

Environmental Consciousness and Sustainability

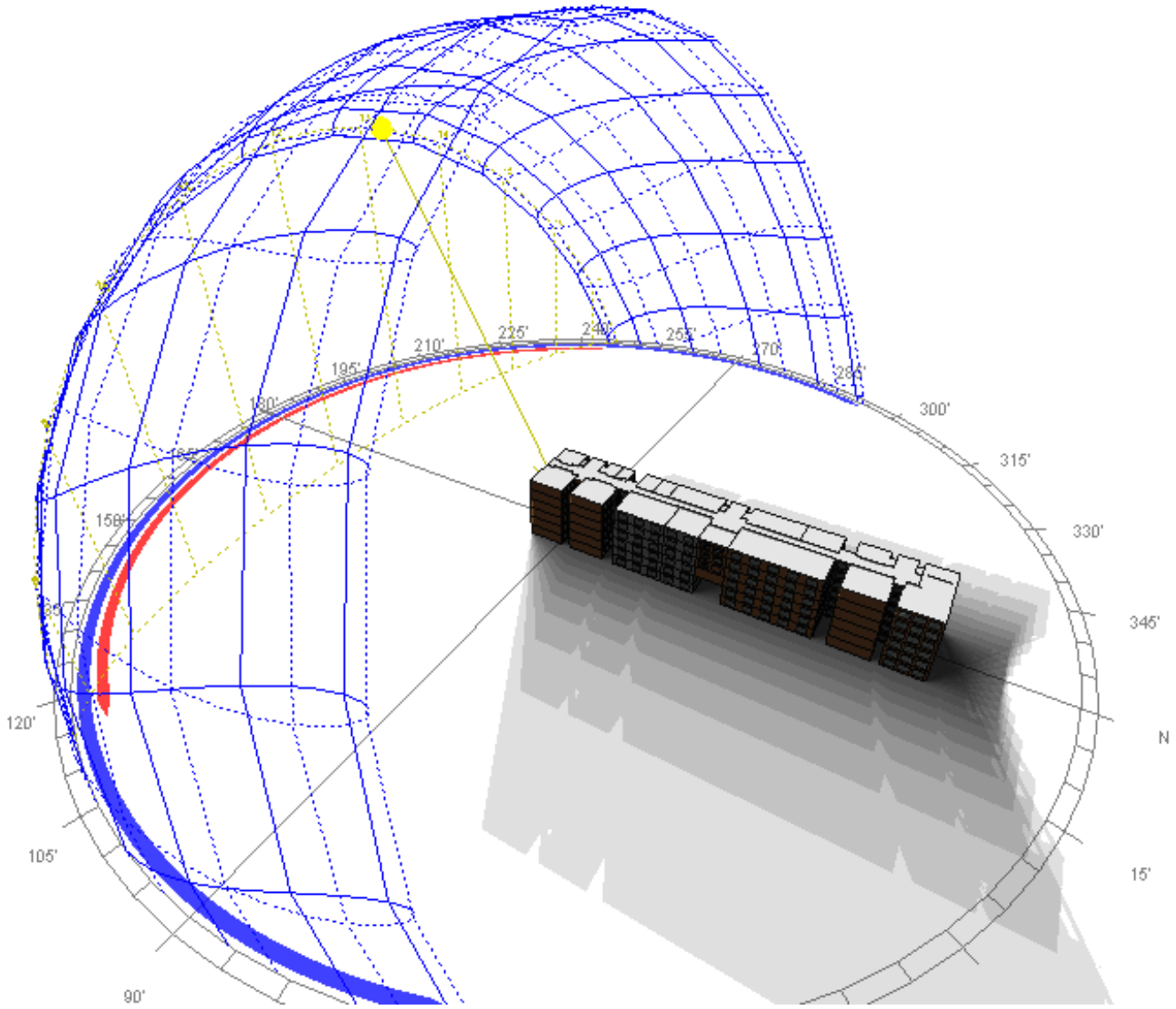
Green Audit

Energy Audit

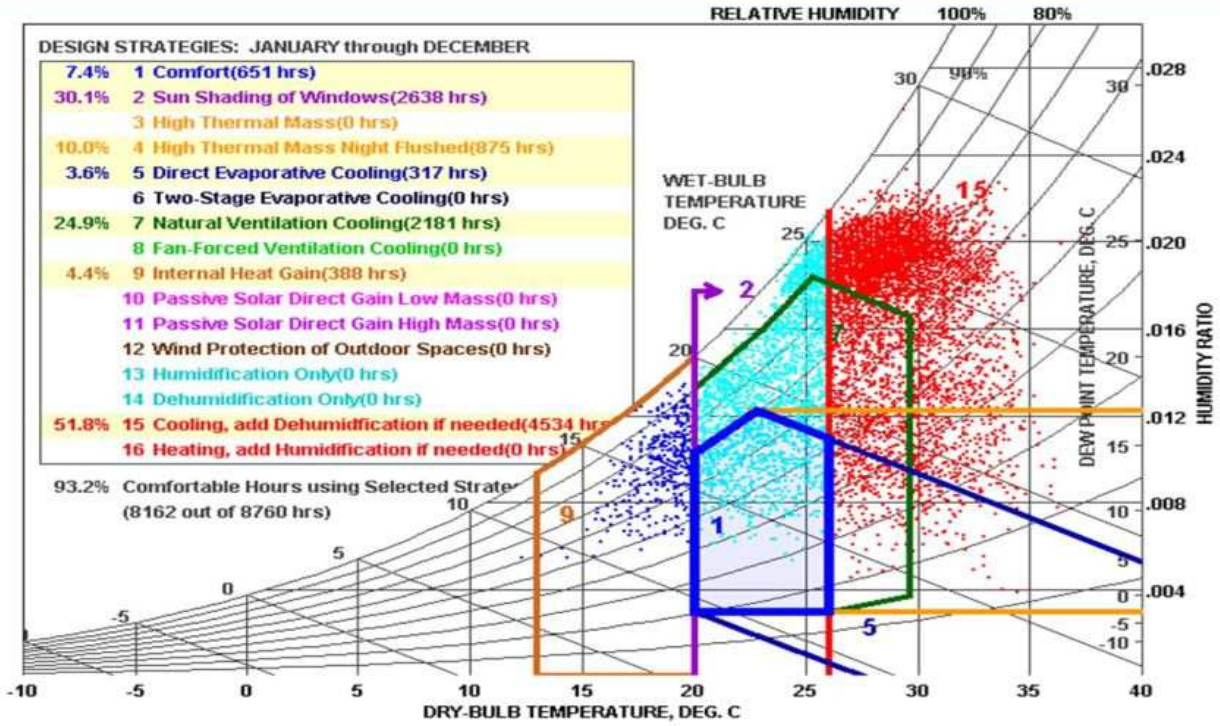
Environment Audit

Through solar Passive Architecture

Indoor Environmental Quality and Building Simulation



Climate Analysis



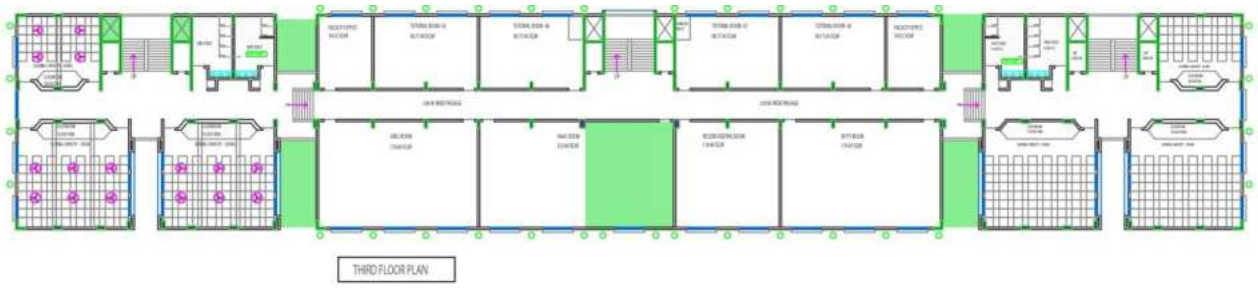
The Pshychrometric Chart above confirms that the four effective strategies are Shading, Ventilation, Internal heat gain and Evaporative cooling. The graph plot on next page shows the degree difference between the Dry Bulb Temperature & Relative Humidity. As per the legend, at least 30% of the total hours 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.

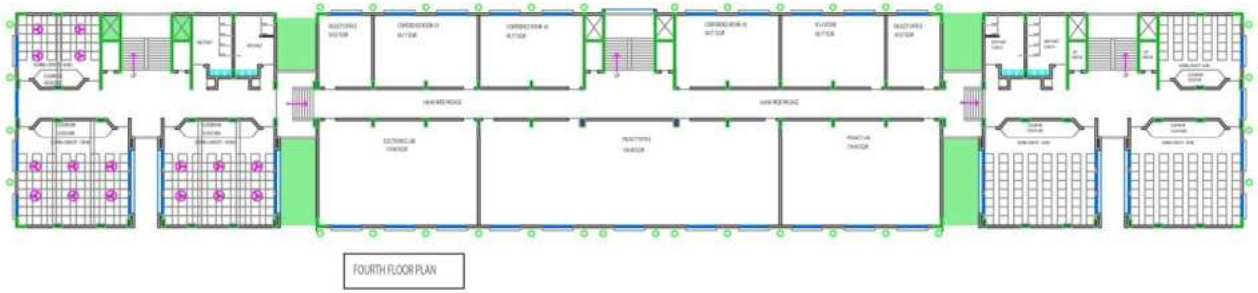
Psychrometric Chart above explains that, no other strategy is effective for passive comfort except Solar Shading & Natural Ventilation.

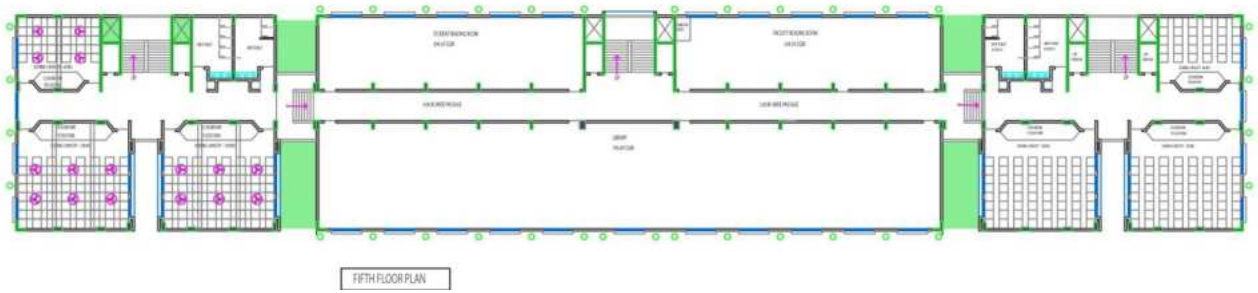
- Strategies like direct evaporative cooling, internal heat gain and High thermal mass are also effective, but for a lesser period.
- Around 30% of total comfort hours can be achieved by Sun Shading.
- Around 27% of total comfort hours can be achieved by Natural Ventilation.
- From all the above strategies 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%.

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

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

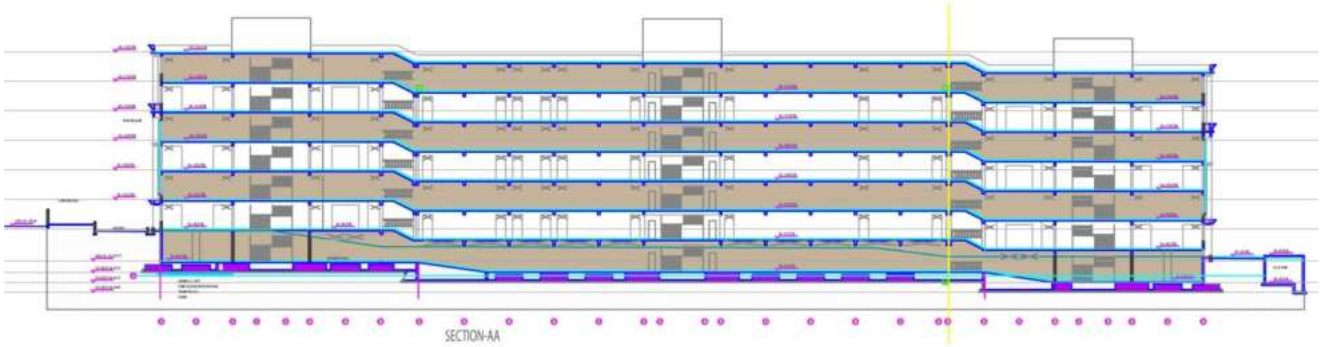






Three courtyards in building are providing sufficient day-light and ventilation to adjacent corridors and class rooms.

Sufficient day light penetration in corridor reduce artificial lilting- 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
A	**Site Planning**		
1	**Soil Erosion Control**	• To control soil erosion concrete paving blocs are used. • Pavers blocks are also endorse ground water seepage. • Plantation is needs to be done along compound wall	
2	**Landscape**	• 3 courtyards are formed in between building, and are planted with various species . • 1 tree for every 80 SQ M open area are required to plant on site. • 185 trees need be plant through out site	• Prescribed number of trees are available on site. 

4	Parking Facilities	• Underground parking is provided as per Requirements and prescribed in bylaws.	
6	Design for Differently Able	• Lift is provided from stilt parking to every floor. Wheelchair accessibility is maintain through ramps and lifts are provided on every floor.	 

D	Indoor Environmental Quality			
Sr. No.	Points	Standards	current	
	Daylighting levels (LUX)			
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	 Average value of day light is 200	

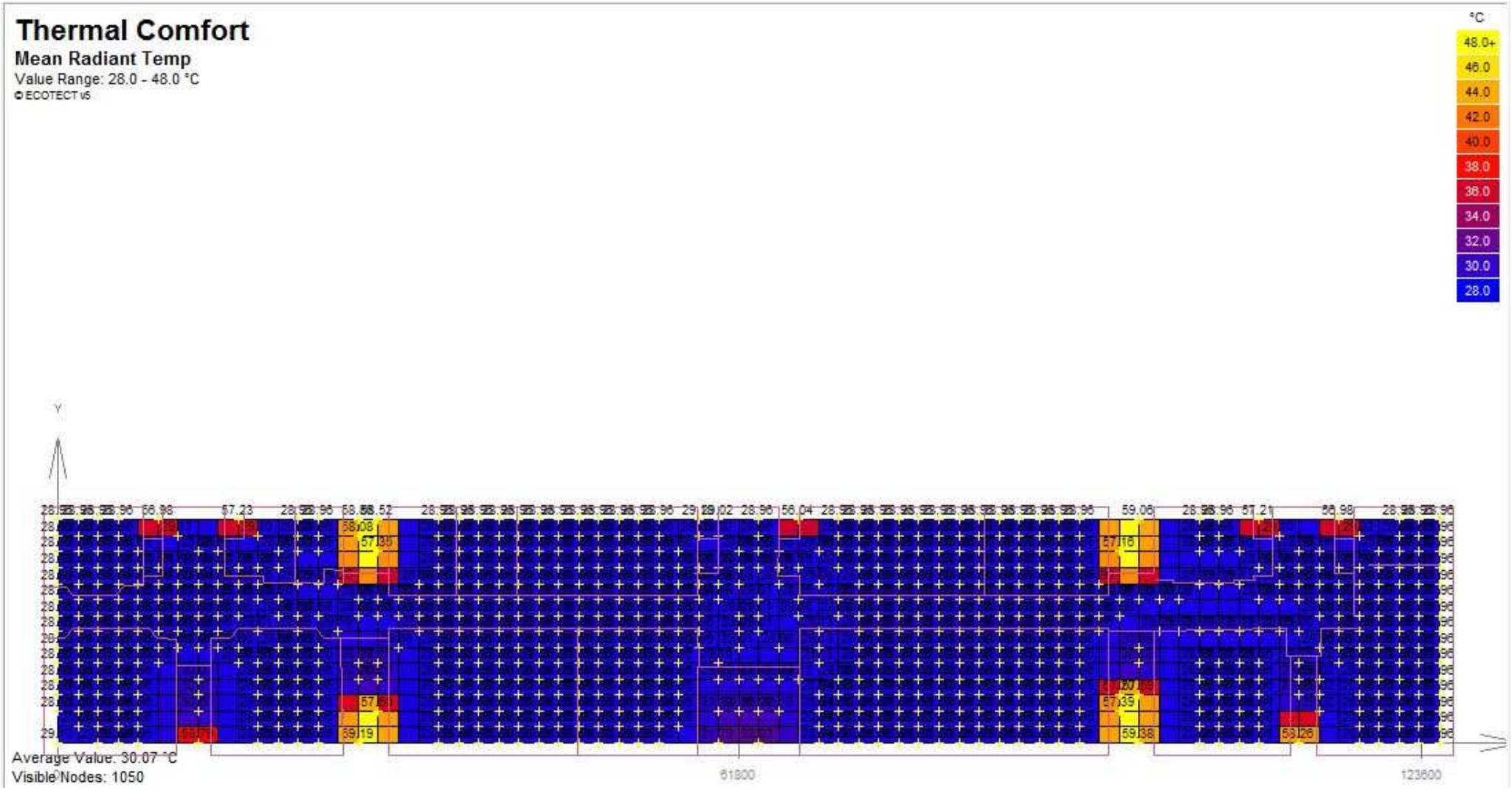
5	Laboratories	300-500	400	Average Value as per standards

WWR- Wall to window area ratio

Optimum WWR as per ECBC norms - averagely which is under 30%. Is helps to reduce heat gain.
As per Building orientation Limited WWR additionally with appropriate fenestration design is done on East -Waste 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 W	30 12	2.40 1.25	2.40 2.40	5.76 3.00	172.80 36.00	208.80	1434.07	15%
NORTH/ SOUTH	W1	12	3.00	2.40	7.20	86.40	86.40	269.03	32%

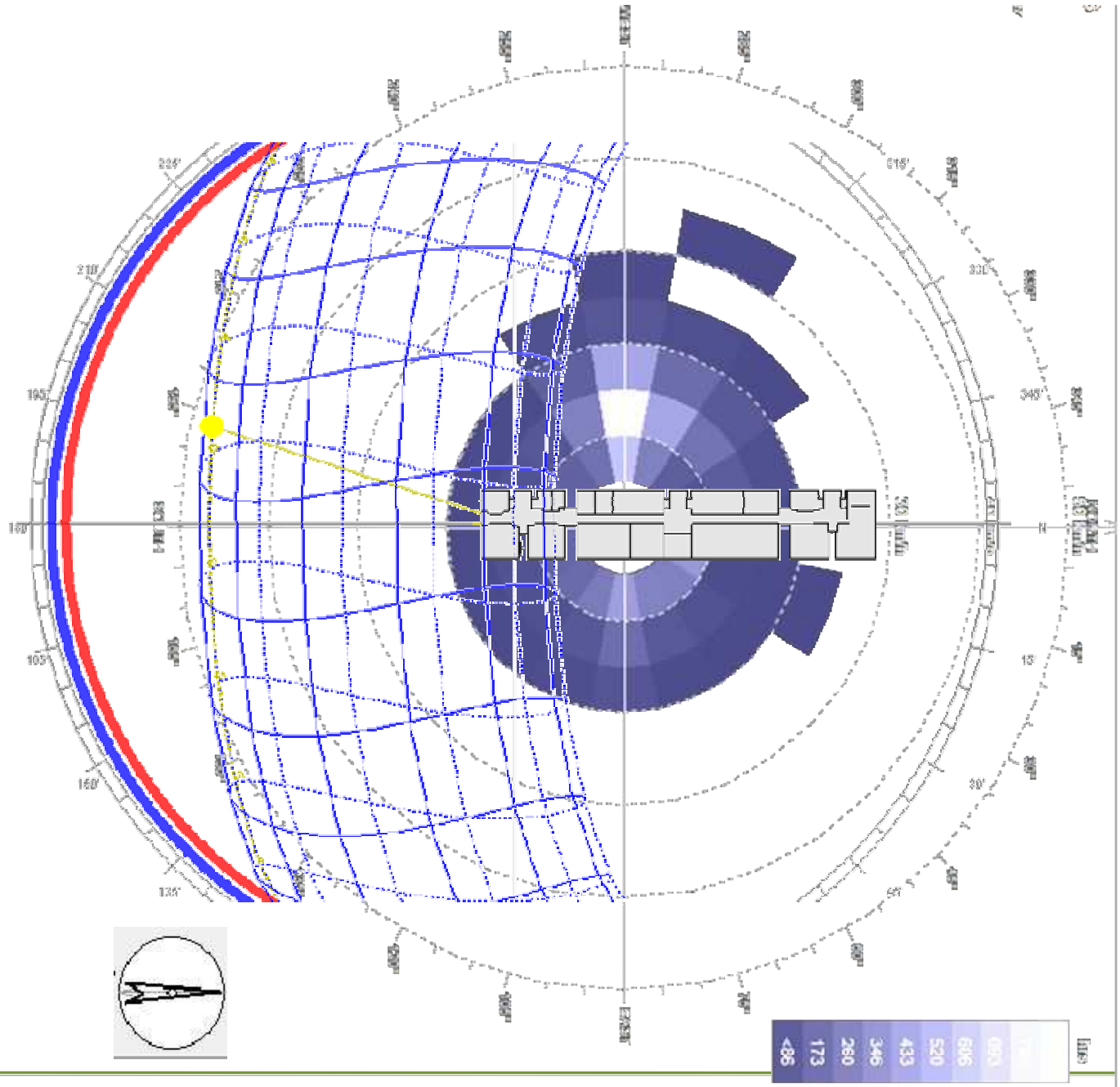
E. Thermal Analysis



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

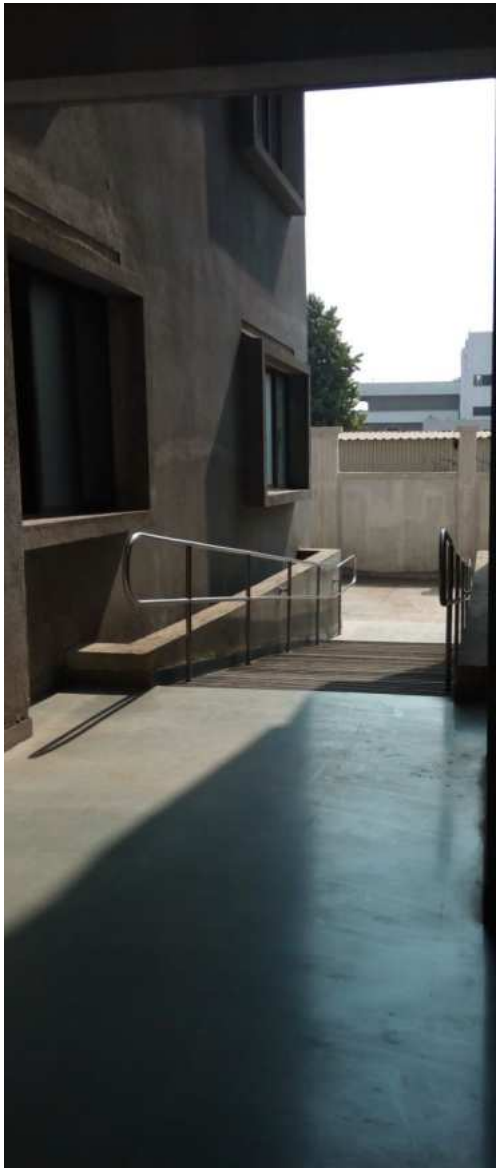
The Wind analysis shows that the building layout corresponds to the prevailing wind direction.
The prevailing wind direction is west.
The average wind speed is 20kmph.
The layout is such that it allows the wind flow to all the floor plats of the building.
The windows, in-between pockets and placement 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.	



7.1.7

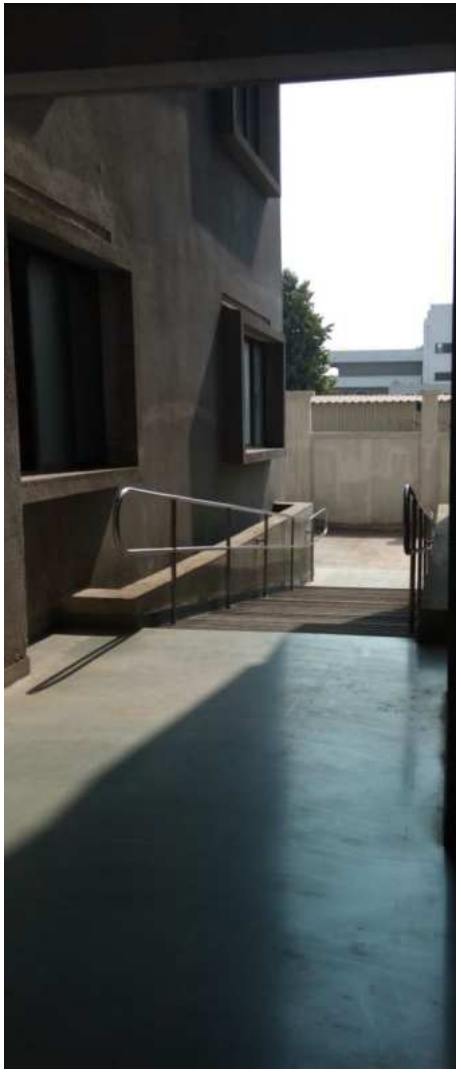
Environmental Consciousness and Sustainability

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.

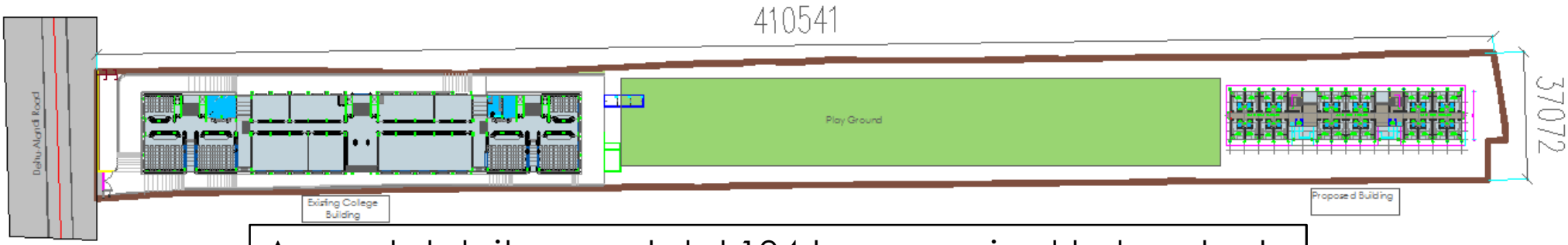
Green Audit

7.1.4

Environmental Consciousness and Sustainability

Green campus initiatives include

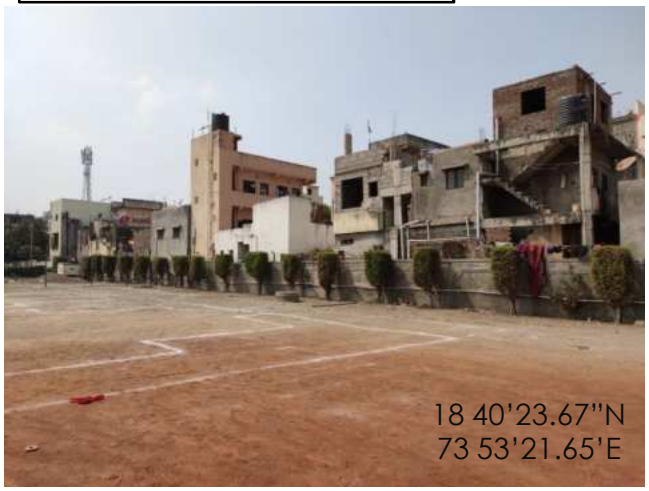
1. Ban on use of plastic – Policy paper is attached
2. Landscaping with trees and plants – details on next slide
3. Appropriate paving and timely watering helps to reduce urban heat island effect

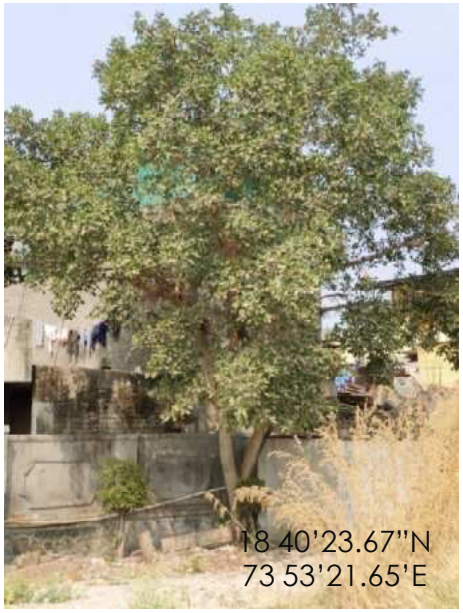


As per total site area total 184 trees required to be plant.

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

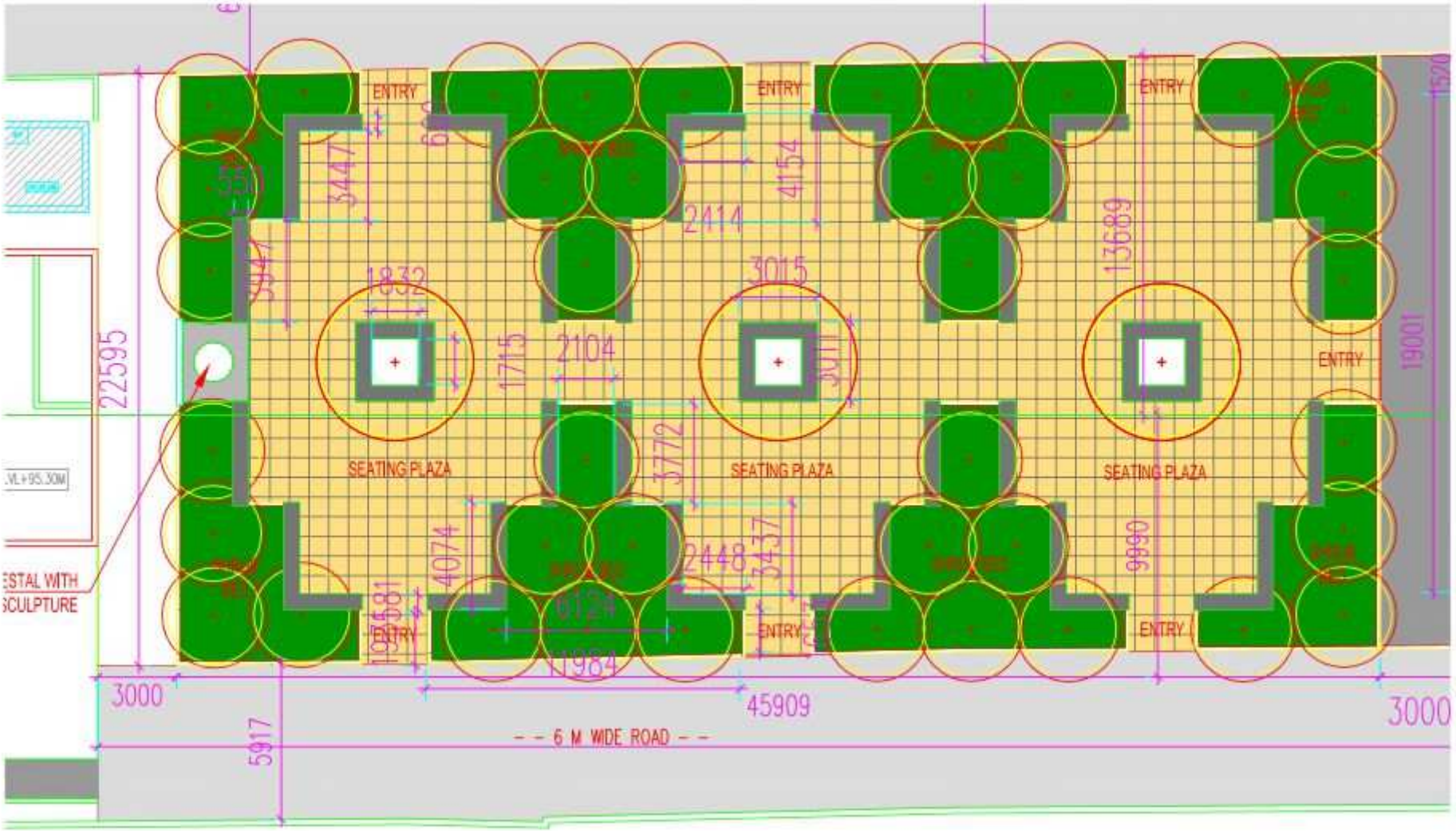




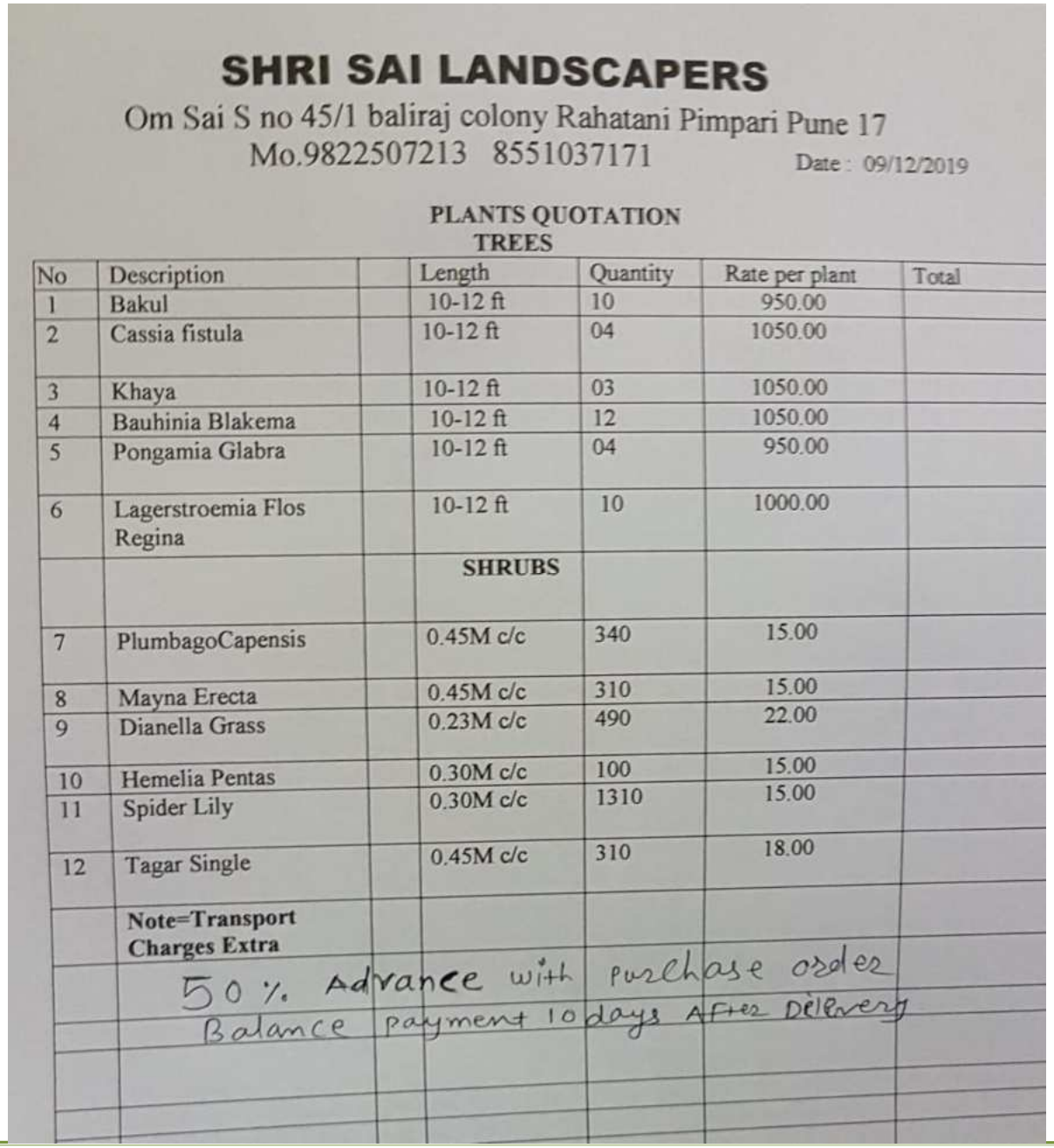
Newly Planted trees on Site Total 155

Appropriate paving and lawn areas helps to reduce urban heat island effect

New Plantation layout and plant list



Quotation ordered for new plantation



SHRI SAI LANDSCAPERS

Om Sai S no 45/1 baliraj colony Rahatani Pimpari 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	
		SHRUBS			
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

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

T HANK YOU