Manipal University Jaipur's Initiative for Effective Carbon Management and Mitigation of CO2 Emissions.

Carbon dioxide is a significant greenhouse gas that contributes to global warming and climate change. Various sectors are responsible for CO2 emissions; however, Manipal University Jaipur, due to its energy-intensive activities and expansive campus, plays a considerable role. In response, the university is implementing strategic measures to assess, manage, and diminish its carbon emissions.

Manipal University Jaipur has demonstrated a strong dedication to environmental responsibility. Acknowledging the pressing need to combat climate change, the institution has formulated a thorough carbon management strategy as a fundamental element of its sustainability initiatives. The university has performed an extensive evaluation of its carbon footprint, which includes all facets of campus operations such as energy use, transportation, and waste management. This initial assessment yields essential data for establishing reduction objectives. With a comprehensive understanding of its carbon emissions, the university has set ambitious reduction targets that are in line with international climate agreements, reflecting its commitment to achieving net-zero emissions in the forthcoming decades. A considerable share of the university's greenhouse gas emissions is attributed to energy consumption. In alignment with its carbon management strategy, the institution is making investments in energy-efficient technologies, enhancing its infrastructure, and optimizing energy utilization throughout the campus. To further mitigate its carbon footprint, the university is making a transition to renewable energy sources. The integration of solar panels into the campus infrastructure is underway to produce clean energy. Acknowledging the effects of commuting and travel, the university is advocating for sustainable transportation alternatives. This initiative includes improving access to public transportation, establishing bike lanes, and encouraging carpooling. The university is dedicated to environmentally responsible procurement practices. By selecting products and materials with reduced carbon footprints, it aids in lowering emissions throughout the supply chain. While pursuing emissions reduction, Manipal University Jaipur recognizes that certain emissions are inevitable. To counter this, it invests in carbon offset projects that either capture or diminish emissions in other areas.

MANIPAL UNIVERSITY
JAIPUR

SOP: Engineering & Maintenance				
MANIPAL UNIVERSITY JAIPUR				
Prepared by:	**Concurred by:**	**Approved By**	**Version:**	**Effective Date:**
Engineering & Maintenance	Col Vipul V Mathur	President	1.0	**Sep 2021**

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MANIPAL UNIVERSITY
JAIPUR

Introduction:

Manipal University Jaipur situated on Ajmer Road, Jaipur, Rajasthan. The total site area is 2,69.80400 Sq M. and total built up area is 1,03,041 Sq M. Numbers of building blocks are 2 for Academic, 1 for administrative and other utility blocks.

AREA STATEMENT – ACADEMIC LAND			
PLOT AREA = 2,69,804,00 Sq. Mts. (66.67 ACRES)			
SL. NO	**PARTICULARS**	**GROSS BUILT UP AREA in Sq. Mts.**	**GROSS BUILT UP AREA in Sq. Ft.**
1	UNIVERSITY ADMIN & LIBRARY BUILDING	23,220	249935.67
2	ACADEMIC BLOCK – 1	31,833	342650.95
3	FOOD COURT	8,206	88334.34
4	SECURITY	230.4	2480.03
5	WORKSHOP	2,776	29881.94
6	SUBSTATION	120.28	1294.69
7	D.G. BLOCK	307	3304.55
8	DISPENSARY	60	645.84
9	VIP SECURITY BLOCK	60	645.84
10	ACADEMIC BLOCK – 2	32,308	347760.51
11	AUTOMOBILE SHED	1,016	10937.73
13	CHEMICAL ENGINEERING LAB-3	328.38	3534.68
14	CHEMICAL ENGINEERING RESEARCH LAB.	97.08	1044.97
15	FURNITURE YARD	1,050	11302.2
16	STP 1&2 (500KLD)	745	8020.79
17	WTP (200KLD)	62	665.66
18	Underpass and CCTV Command Center	622	6695.21
TOTAL		**103,041**	**11,09,135.60**

MANIPAL UNIVERSITY JAIPUR

SPORTS		
SL. NO	PARTICULARS	ACADEMIC (Nos.)
1.	BASKETBALL COURT	4
2.	VOLLEYBALL COURT	4
3.	TENNIS COURT	4
4.	CRICKET GROUND	1
5.	FOOTBALL GROUND	1
6.	ATHLETIC / JOGGING Track 400 & 300 Mts.	1
7.	SHOOTING RANGE	1
10.	Table Tennis	1
11.	BADMINTON COURT	-
12.	SQUASH COURT	-
13.	GYMNASIUM /YOGA	-

CLASSROOMS/LABS			
SL. NO	PARTICULARS	CLASSROOMS	LABORATORIES
1.	ACADEMIC BLOCK - 1	57	46
2.	ACADEMIC BLOCK – 2	88	40
3.	WORKSHOPS	14	
4.	SMT SHARDA PAI AUDITORIUM	268 (SEATING CAPACITY)	
5.	DR TMA PAI AUDITORIUM	401 (SEATING CAPACITY)	
6.	DR RAMDAS PAI AMPHITHEATRE	1024 (SEATING CAPACITY)	

Purpose:

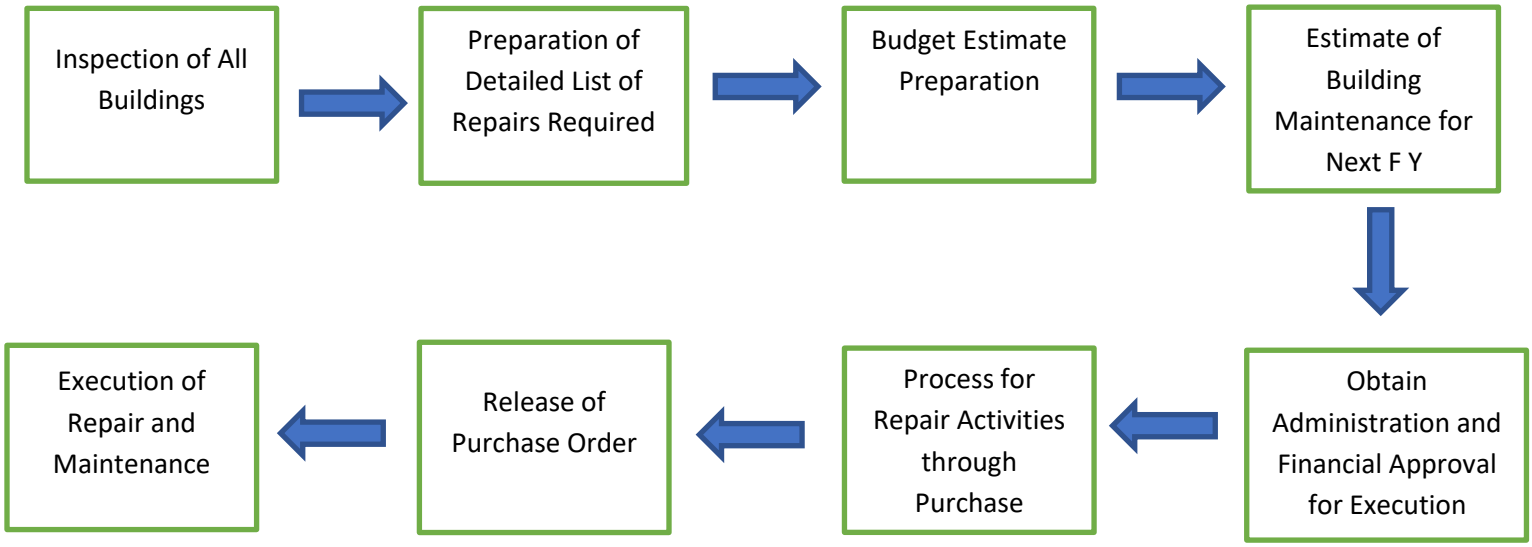
To streamline the process for Repair and Maintenance of University infrastructure and emergency procedures for Manipal University Jaipur.

MANIPAL UNIVERSITY
JAIPUR

SOP For Repair & Maintenance

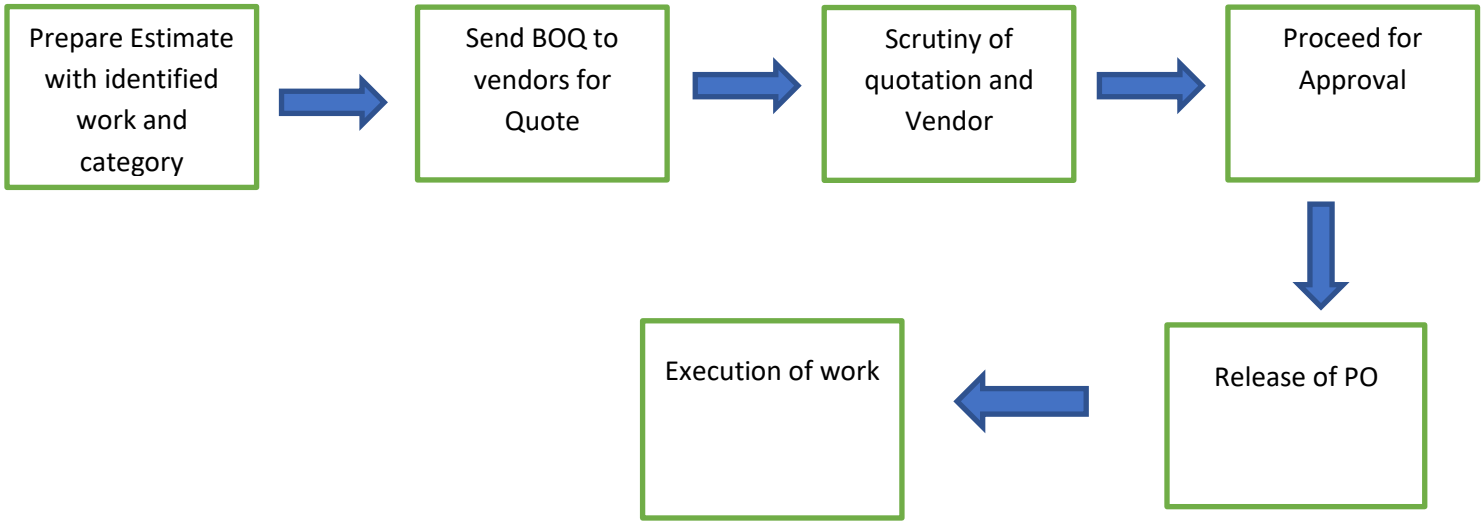
Building Maintenance Procedure:

The procedure for repair and maintenance of buildings is as under:



Sudden/ Emergency Work Procedure:

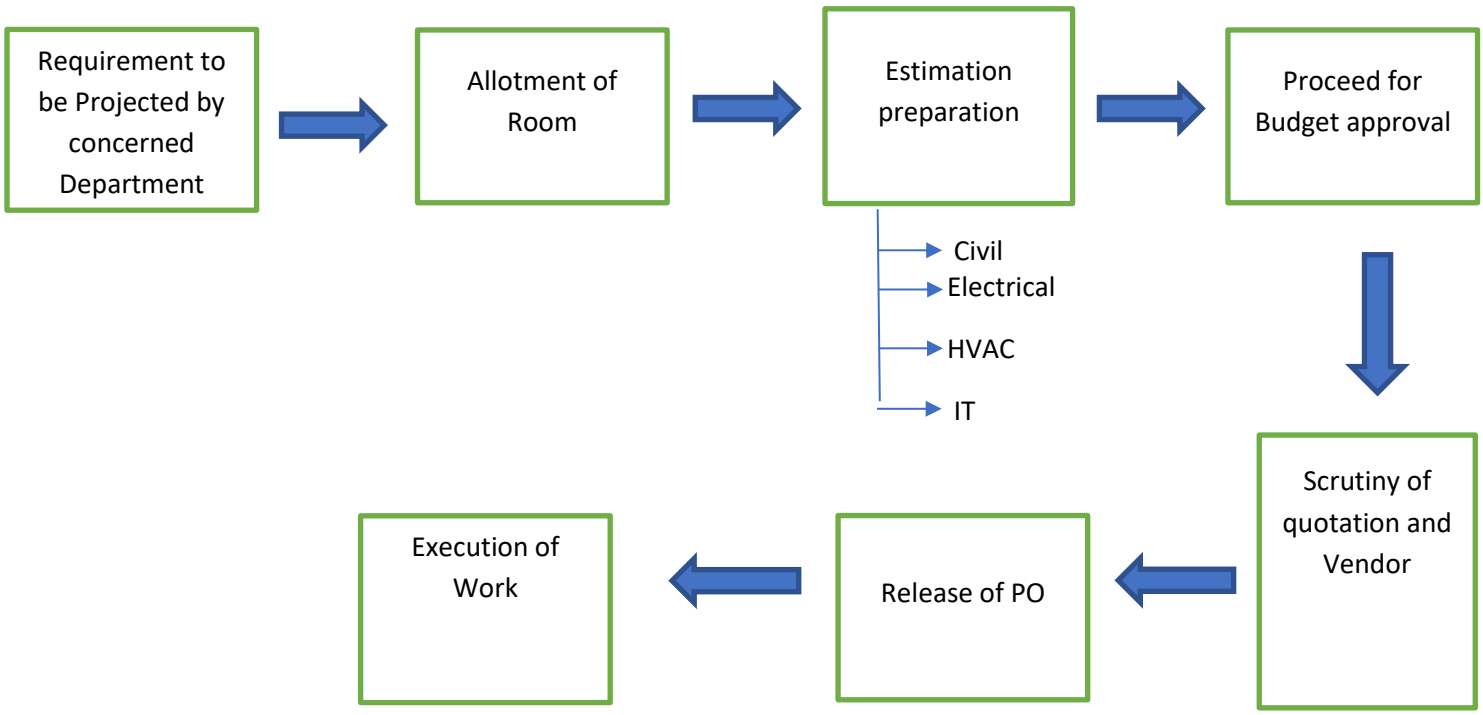
Urgent repair work procedure is as under:



MANIPAL UNIVERSITY
JAIPUR

New Lab Setup

Procedure for establishment of new Lab or new Facility is a under:



MANIPAL UNIVERSITY
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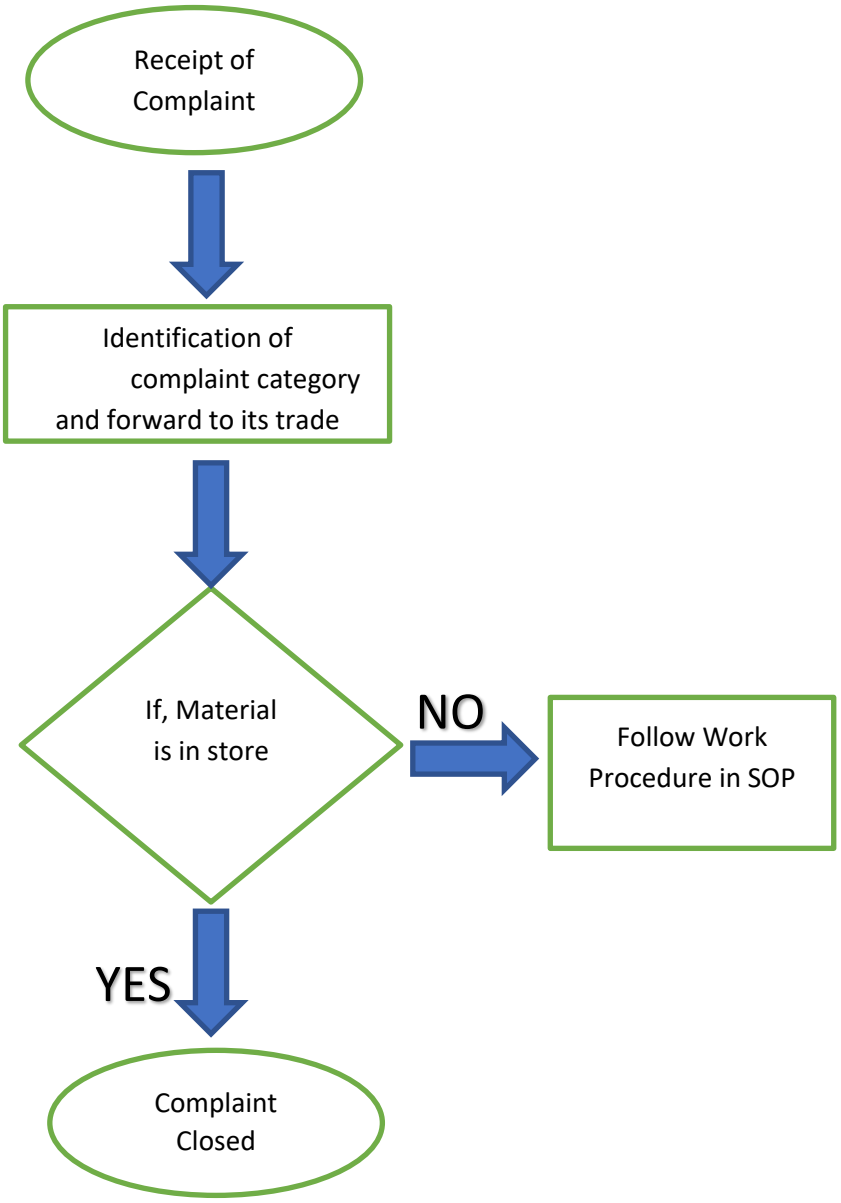
Trouble Call Sheet

Purpose and Scope: To identify what type of request and/or trouble calls are received after normal working hours.

Policy: This log will assist supervision in informing other departments as to the nature of the problems that have occurred and what action was taken to correct the situation if it was possible.

Procedure: A Trouble Call Sheet will be completed for calls/complaints received after the scheduled business hours of Working Days, 9:00am to 6:00pm. Descriptions should be a thorough as possible. These sheets are given to the Manager of Plant Operations for review.



MANIPAL UNIVERSITY
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Maintenance & Operation of Equipment's:

33KV Sub Station

a. High Voltage Switch Operation

Purpose and Scope: To outline the proper equipment and procedure for the operation of the Main Campus high voltage switches.

Policy: Main Campus high voltage switches and transformers are to be operated only by trained employees, following proper safety guidelines. The trained employee will not operate a switch without the following safety equipment: hot stick or shotgun stick, high voltage gloves rated at least to 34000and 12000 volts for moving of cables or elbows. Only the person responsible for the job task will lock or unlock the switch (es).

Procedure: The hot stick or shotgun stick will be used to energize or de-energize all switches. Ay time the employee is moving cables or elbows, the switch must be de-energized and high voltage gloves will be worn. All switches will be locked in the OPEN position during any work on the switch itself or switches down the line. Only the person responsible for the job task will lock or unlock the switch (es). All elbows should be put on grounded parking stands until they are ready to be put back in service. NOTE: Work on any switches or transformers shall only be done with notification and scheduling by Plant Operations Supervisor or Manager.

Note: The high voltage equipment and low voltage equipment set is on AMC to OEM to take care of its proper working checks and any further requirement of material and service for smooth operation processes. The scope of work is defined in their work order.

b. Switching Campus Power to Normal Feed from Medium Voltage

Purpose and Scope: To identify the sequence and switching procedure to transfer campus power from alternate power feed to primary normal power feed from Electricity Board Power. The switching procedure will be coordinated with Electricity Board Power representatives.

Procedure: The following steps describe the switching sequence and operations procedure to switch power serving campus from the alternate Electricity Board Power feed.

1) Secure (turn off) all HT breakers.
2) Open (de-energize) outgoing Feeders (Feeders #2, 3, 4, & 5). F1 (Feeder #1) and the main should already be open in the alternate feed configuration.
3) Electricity Board Power will open (de-energize) the alternate feed gang operated switch.
4) Open (de-energize) S2
5) Close (energize) T2. (This is the normal connection when campus power is fed from the primary feed. Remove lockout tag and lock from S1 and close (energize) switch. (F1 is Feeder #1).
6) Electricity Board Power will close (energize) primary power feed cutouts.
7) Close (energize) the main.
8) Close (energize) F1, F2, F3, F4, and F5 (Feeders #1, 2, 3, 4, & 5).
9) Perform normal campus checks on equipment and buildings following a power outage.

c. Medium Voltage Electrical System

Purpose and Scope: To identify the specific wiring configuration of the medium voltage switch and current switching procedure.

Policy: Operation of switching to an alternate configuration will be supervised by the Manager or Supervisor of Plant Operations.

Procedure:

1) Switch S1 (Campus Feeder #1) is the normal underground campus electrical feeder that feeds switch. This switch is normally in the closed position (energized).
2) Switch S2 and S3 (Campus Feeder #2) are switched normally open (de-energized).
3) S3 (Campus Feeder #2) can also feed the switch in lieu of feeder #1.

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d. Equipment Pre-Operation Inspection-Diesel Generator

DG SETS

DG BLOCK

MUJ DG Sets	Make	Capacity
DG1	Greaves Cotton	500 KVA
DG2	Greaves Cotton	500 KVA

Purpose and Scope: To establish a policy for inspecting equipment before its use.

Policy: The following steps and descriptions are required to prevent damage to the equipment and operator.

Procedure: Operators should check the following items as described before the operation of any equipment. Due to the heat and dust this equipment is operated in, wear out is very quick. This inspection would prolong life of the equipment.

Before equipment startup, check these items:

1) Engine oil level
2) Grass deflector in down position and clear of debris (if applicable)
3) Brake operation
4) Cooling system fluid level
5) Dust cap and pre-filter (air)
6) Radiator and screen for debris
7) Hydraulic hoses for leaks or damage
8) Fluid leaks or puddles
9) Tire pressure

After equipment startup, check these items:

1. Safety interlock system
2. Brake operation
3. Unusual engine noises
4. Hydraulic hoses for leaks or damage
5. Fluid leaks or puddles
6. Instrument operation
7. Unusual power takes off unit noises Report any areas of concern to your supervisor so that equipment Maintenance can be notified by way of work order.

e. Fuel Oil Tank Operation

Purpose and Scope: To provide the user with a guideline for the proper usage of the 2x800 liter fuel oil tank and pump. This system is utilized to fuel the MANIPAL UNIVERSITY JAIPUR Main Campus's emergency generators during and after use. This allows the department to maintain the generators during and after severe weather, by providing fuel in order to supply an uninterrupted emergency power source.

Procedure:

1. Plant operation office raise the requirement of Fuel for Emergency Power back up as approved with transport
2. After receive Fuel in day Tank through 200Ltr drums as per qty
3. Fuel tank will be filled as per requirement from day Tank
4. When the fuel tank level is satisfactory.
5. Return the nozzle to its holder will be turned off

NOTE: Log the amount of fuel placed in each generator along with the time, date, and operator's initial. This will allow the tracking of the fuel consumption used by each piece of equipment.

The DG generator set is on AMC to OEM to take care of its proper working checks and any further requirement of material and service for smooth generator operation processes. The scope of work is defined in their work order.

f. Online UPS System

UPS SYSTEM

Sr No	Location	UPS with Capacity
1	AB 1	30 KVA
2	AB 1	30 KVA
3	AB 1	30 KVA
4	ADMIN	30 KVA
5	ADMIN	30 KVA
6	ADMIN	30 KVA
7	ADMIN	31 KVA
8	AB 2	40 KVA
9	AB 2	40 KVA
10	AB 2	15 KVA
11	AB 2	15 KVA
12	AB 2	5 KVA
13	AB 1 Room 011	20 KVA
14	AB 1 Virtual Classroom	7.5 KVA
	Total Capacity	**352.5 KVA**

Purpose and Scope: Uninterruptible power supply, UPS, systems provide continuity of service for critical systems in the event of power failure and so enable the University to deal with several risks associated with power failure.

Policy: The University has several UPS systems, ranging from the large, fixed installations operated primarily by IT Services and Estates & Facilities, to small portable units connected plugs. UPS systems pose risks not normally associated with electrical mains equipment because they store large amounts of energy and continue to generate potentially lethal electrical power even when isolated from the mains supply.

If undertaking work on equipment supplied by a UPS, ensure that the equipment is disconnect from UPS (not the UPS from the supply), and prove dead using approved method. UPS systems have a finite life but are generally unobtrusive until they fail. Failure becomes much more likely as the units age. Due to the amount of energy involved, it is IT Services experience that UPS systems may fail in a potentially dangerous manner. Since UPS systems continue to supply power when their supply is isolated, they pose a risk to firefighting and electrical maintenance. Also, because UPS systems continue to supply power even when disconnected from the supply, special attention is required to maintain the protective earth. UPS systems consume more electricity than they supply to the load and the cost of the electricity consumed will probably far exceed the initial cost of the UPS system over its lifetime. Due to the risks and costs of operating UPS systems, Battery maintained systems such as fire alarms, emergency lights etc. are excluded from these procedures as there are separate procedures coving their use. Typically, these types of systems do not pose the same risks due to operating at much lower voltages, storing much less energy etc.

As UPS systems age, they become noticeably less reliable, this as the batteries incorporated within the UPS lose capacity over time. At some point it is certain that the battery cells will start to fail. Some cell failure modes can cause runaway conditions.

UPS systems also have a relatively high probability of failing due to stressed, high power electrical components. This probability increases significantly over time. These failures can also lead to the UPS overheating.

Probably due to their inherent reliability issues, UPSs are expensive to maintain, and the maintenance sometimes excludes key items such as batteries.

Batteries

Most UPS's will use sealed or maintenance-free batteries (VRLA). Such batteries are generally much safer to handle than the traditional (wet) lead-acid battery, but they must be treated with respect.

UPS systems use the batteries to store energy for when the mains electricity supply fails. Batteries are generally specified in two basic qualities. Typically, smaller UPS systems are supplied with five-year batteries. This means that the design life of the battery under ideal conditions is normally only three-five years and after that period they will have typically half of their original capacity remaining and the likelihood of outright failure is increasing.

UPSs are rarely operated under ideal conditions (e.g., 15 – 25oC) and so the expected battery life will be reduced.

After the nominal design life, typically 5 years, UPS systems should be disposed of and replaced if they are still required. Replacement of batteries is generally not economic. Disposal should be via the authorized channel Arter of Battery Manufacturer.

Recommendation

The University's Health and Safety Policy makes it clear that each College and Department is responsible for managing and ensuring the safety of their own equipment and activities. With respect to UPS units Colleges and Departments are advised to implement systems that:

a) Control the purchase and installation of UPS's
b) Ensure UPS's that are required are suitable for purpose and can be powered via a three-pin plug
c) Ensure UPSs are recorded on a register and regular inspections, per manufacturer's instructions, are undertaken, with records kept
d) Ensure UPS units are disposed of via ITS when they come to the end of the manufacturer's advised useful life
e) Notify Estates & Facilities of the intention to install a UPS of above 1 kVA (1000VA) prior to purchase.
f) When selecting a location for a proposed UPS system consider:
g) Temperature. The recommended operating range is small, for example 18 degree C'– 22 Degree C'
h) Floor loading. UPS systems can often be heavy enough to need special consideration.
i) Ventilation. Select a clean location that will not become cluttered, particularly with flammable objects such as paperwork.
j) Access. There must be sufficient access to maintain the UPS safely.

Maintenance and monitoring

It is recommended that Departments consider purchasing an extended warranty if available and financially viable. To address the reliability and potential fire risk, it is recommended that the entire system is replaced at the end of the expected battery life. Fixed installations above 10 kVA should be covered by a maintenance contract that delivers the manufacturer's recommended maintenance plan.

Earthing -Some UPS systems greater than 1kVA must be separately earthed and should be discussed with Estates and Facilities.

I. Risks to Firefighting and Electrical Maintenance

All UPS systems greater than 1kVA should be notified to the fire safety officer who will then ensure they are considered in the fire risk assessment. Each college or department must also consider the fire risk from UPS in their own risk assessment.
Inspection and Performance Monitoring -It is recommended that all UPS systems are recorded on a register which holds the following data:

1. UPS specifications

- Asset number
- Description
- Location
- Manufacturer
- Model Serial number
- Power rating
- Design Autonomy (Backup time)
- Maintenance information
- Date of purchase
- Expected design life
- Preventative maintenance interval

a. All Utility Meters Reading

Purpose and Scope: To determine of Energy Uses and profile, Utility Budget any necessary billing. Policy All campus and building utility meters will be read on daily and monthly basis for data comparison and billing

a. Procedure:

2. The readings will be taken by the Engineering and maintenance staff on daily basis for building utility for Main HT and LT panels. Hourly reading of Transformer HT panels and CT PT to Power factor and load of the campus.
3. The meter readings will be made by duty electrician and 24 Hrs. duty will be fixed on Powerhouse 33KV substation for Hourly Monitoring.
4. The powerhouse reading will be taken at 0100 hours for every day on hourly basis for calculation of monthly consumption.
5. Monthly consumption of all campus will be submitted to Head GS&A for submission for Discom Energy bill.
6. All data will be kept in hard copy in form of Note sheet, Verification sheet, Discom Bill and Daily energy resister.

b. Energy Savings and Audit

Purpose and Scope: To reduce electrical consumption by using lighting only as needed to perform duties in unoccupied spaces and pr.

Policy: Area lighting will be turned on in offices, meeting/conference rooms, and classrooms by help of Campus security when the building is unlocked. Except for classrooms and hallways, lights are to be turned off upon leaving, if the space is no longer occupied. Lights will be extinguished by Campus Police at the end of the day when locking the facility.

There will an endeavor to replace all lights with low energy consuming LED lights

Regular energy audit to be carried out to ensure energy savings.

Periodic checks regarding losses/ leakage of power to be carried out.

All new equipment purchase should be 5 Star BEE rating only.

c. Interior Lights and Fan Works

Purpose and Scope: To formalize Plant Operations with procedures for interior re-lamps.

Policy: Plant Operations is responsible for maintaining all mounted light fixtures. Desk lamps and flood standing light fixtures are the responsibility of the department.

Procedure: The replacement of bulbs should be assigned to maintenance personnel if the fixture is at an elevation of ten (10) feet or more.

1. Turn the switch off that controls power to the light.

2. Replace the light/driver while wearing safety glasses and gloves.

3. Turn switch to “on” position.

4. If the new bulb does not light, unplug the fixture, and submit a complaint for the removal and repair of the fixture.

6. Dispose of spent light and drivers in central store for proper recycling bins for authosused PCB parterner.

d. Exterior Light works

Purpose and Scope: To formalize Plant Operations with procedures for exterior lightning work.

Policy: Plant Operations is responsible for maintaining all exterior building mounted and parking lot/street lighting.

Procedure: All work shall be performed in accordance with established safety guidelines.

- Verify electrical power and proper voltage is present.
- Verify time clock working properly.
- Secure power source (lockout/tag out), examine bulb, and, if it appears bad, remove and replace. Clean reflector lens. Turn power source on.
- If light is not working, secure power source (lockout/tag out), disassemble fixture to driver, examine ballast, and, if it is obviously burned out, remove and replace.
- If driver appears to be in good condition, turn on power source and take voltage reading at fixture. If proper voltage is present at fixture, secure power, and remove and replace ballast.
- Dispose of spent bulbs and ballasts in proper recycling bins in central store.

e. Used Lights and Drivers

Purpose and Scope: To formalize Plant Operations with the proper procedures for storage of used bulbs and ballasts.

Procedure: When storing used lights and drivers, all boxes and tubes must have spent mercury labels/ LED affixed to each container. Label containers with date and piece count. Store drivers in drums. PCB and non-PCB ballasts must be separated into separate drums. If ballast read “non-PCB”, then consider it NonPCB. If no information, then consider it PCB. Keep all bulbs of the same type in containers placed together. Broken bulbs shall be stored in container provided. Clean up any mess made during bulb storage, keeping dust to a minimum. Bulbs will be stored until a large quantity has gathered for transport to MANIPAL UNIVERSITY JAIPUR waste segregation yard for disposal to authorized channel partner of State Pollution control Board.

f. Passenger Lift Operation & Rescue

Purpose and Scope: To formalize a procedure for proper use and operation of a passenger lift.

Policy: Employees/visitors/students of Campus may use lifts to transport and handle materials (up to the limited weight). Their use is guided by established departmental policies and procedures and Occupational Health and Safety Act and Regulations. When operated by user's passenger lifts can be safely utilized without injury, property damage, or other incidents. This policy and procedure are in place to provide guidelines as to the safe and efficient operation of passenger lifts.

Procedure:

The following procedures must be followed during stuck in the passenger lifts.

1. If Power failure, during operation then wait for 1 minute to activate Automatic Rescue Device (ARD) then with Help pf ARD, lift will automatically open nearest floor with slowly Speed. This rescue time will take 2 minutes.
2. If above not happened, Press the call 7727006793 /Alarm button in lift which is in Braille Language also. Nearest security will be rescued from the passenger lift.
3. Only authorized personnel may retain the lift in Normal operation.
4. Checks for Passenger lift

I. 1.Authorized service personnel of passenger lifts in accordance with their training and the occupational Health and Safety Act and Regulations.
II. 3. Check weight load lifting to ensure that it is within the lifting capacity and stability of the car. Secure and properly position the load, twice in a year.
III. Inspect the passenger lift before use against the posted checklist. Under no circumstances is the car to be used if there are noticeable defects. Report all problems immediately to Supervisor.

Note: Passenger lifts is on CAMC (comprehensive annual maintenance contract) to OEM (Original equipment manufacturer) to take care of its proper working checks and any further requirement of material and service for smooth lift operation processes. The scope of work is defined in their work order.

g. Heating Ventilating and Air-Conditioning Operating Procedures

CHILLER PLANT & DUCTING

Detail of Air Conditioning System Covered Under AMC							
		1AB	1C	2AB	FH1, FH2 and GH	External Area	
SR No	Type of Equipment	Total capacity in TR	Total capacity in TR	Total capacity in TR	Total capacity in TR	Total capacity in TR	Total
1	Total Chillers	480	240	810			**1530**
2	Exhaust and AHUs	601	127	422	10.5	25	**1185.5**
3	Total Cassette Units	170	324.95	966			**1461**
4	Total Regular Split Unit	24	26.5	17.5		19	**68**
5	VRV & Inverter Units	105	30	26	236.7		**498.7**
6	Duct able and Scroll with AUH Units		30				**30**
	Total Tr ->	**900**	**787.95**	**1431.5**	**247.2**	**44**	**3409.7**

➢ Operating Parameters

Purpose and Scope: To formalize the heating ventilating and air-conditioning operation temperature parameters at the MANIPAL UNIVERSITY JAIPUR. The HVAC operation is a significant portion of the cost of utilities and to minimize the cost of operation while maintaining comfortable indoor conditions.

Policy: It shall be the policy of the MANIPAL UNIVERSITY JAIPUR to use 24-26 degrees Celsius. as the targeted temperature for air conditioning and 24-26 degrees Celsius as the targeted temperature for cooling and chilled water at Chiller outlet Temp-8-10 degree Celsius.

It shall be the policy of the MANIPAL UNIVERSITY JAIPUR to use 18-20 degrees Celsius. as the targeted temperature for air conditioning and 24-26 degrees Celsius as the targeted temperature for heating. Chilled water at Chiller outlet Temp 26-30 degree Celsius.

Procedure: Effort will be made to maintain these targeted conditions Working Days 9:00am to 6:00pm for most buildings. Building which have extensive weekend and nighttime use such as the library, commons, computing center, Auditorium, will have targeted conditions always met. Exceptions will also be made for some laboratory buildings that use extensive amounts of outside air. Additionally, some building with less zone control HVAC systems may have slightly different set points at the discretion of Plant Operations. If occupants have a need to utilize the buildings during hours that HVAC conditions are not being met, they may call Plant Operations at 7727006793.

➢ Electrical and HVAC Equipment Inspection and Repair-AHU

Purpose and Scope: To formalize a departmental policy to restore electrical and HVAC services immediately following an electrical outage.

Policy: There is a direct air condition to classroom via ducting in Academic Block 1. The air handler should be set on manual to run continuously for this area of the building. AHU air handlers in this building may or may be on according to the start/stop schedule of Camus timings. Visual inspections should be performed weekly, as well as sequencing motor. All other tasks should be performed quarterly or as needed.

Procedure: Inspections

1. AHU sequencing; turn off/on to check operation
2. Perform visual inspection.
3. Check belts for tension/alignment and wear and replace, if needed.
4. Inspect pulleys.
5. Inspect dampers to confirm proper and complete closure.
6. Observe actuator/linkage control.
7. Check fan blades and clean, if needed.
8. Check air quality; inspect for moisture – growth on walls and ductwork.
9. Check wiring to fan motor/controls.
10. Check filters and replace, if needed.
11. Inspect ductwork and repair loose connections, etc.
12. Check coils and clean, if needed.
13. Check insulation and repair/replace damaged areas, if needed.
14. Power Outages
15. Planned electrical outages. Please notify the Manager of Plant Operations at least twenty-four (24) hours in advance of the shutdown to allow time to back up data.
16. Unplanned electrical outages. Outages occurring after normal working hours or during the weekend.

➢ HVAC in Server and Communication Room

Purpose and Scope: To formalize a departmental policy to restore electrical and HVAC services immediately following an electrical outage.

Policy: Network servers require air-conditioning to prevent equipment or data damage. There is a direct air conditioner is installed to servers. The air conditioner should be set on manual to run continuously for this Server and communication of the building. The servers can be damaged if the electrical building system enables the server to function without conditioned Temp. Other air Conditioner in this building may or may not be on according to the start/stop schedule. Visual inspections should be performed daily and recorded. All other tasks should be performed quarterly or as needed.

Procedure: Inspections

1. Turn off/on to check operation -Weekly

2. Perform visual inspection-Daily

Plant Operations will start up the air-conditioning system that provides conditioned Temp to the server room. It is critical to assure the air conditioning system is restored to avoid computer equipment damage.

➢ Annual Chiller Maintenance

Purpose and Scope: To provide general guidelines for Plant Operations personnel to perform yearly preventive maintenance on large tonnage chillers located on the MUJ campus. These guidelines are general; however, they provide guidance for in-house personnel to perform annual maintenance on chillers. Detailed specs are kept on file for outsourcing. A list of the chillers located on campus is provided.

Procedure: **Chillers:**

Daily:

- Inspecting the Chillers for any leakage in the Refrigerant Circuit.
- Checking the Crank case Heater for its functionality.
- Check for any abnormal noise.
- Visual Inspection of Electrical Panel.
- Recording operating parameters on hourly basis.
- Checking the water level in the makeup tank.
- Checking the water leakage if any in the chilled water system.
- Checking the drain point of the plant room for any clogging.
- Checking the cleanliness of the plant room.

Quarterly:

- Inspect Condenser coils/Condenser tubes for cleanliness & clean.
- Document all maintenance, etc.

➢ HVAC Too Hot or Cold Building Maintenance

Purpose and Scope: To familiarize Plant Operations employees who to contact when HVAC trouble calls occur.

Policy: When an HVAC unit is reported as being too hot or cold, a Plant Operations employee will inspect the unit for problems before regulating temperature.

Procedure: The Plant Operations employee will inspect the unit before regulating temperature. If a problem is discovered, they will evaluate the most expedient manner and time for completing repairs and report the situation to the Manager of Plant Operations.

➢ Split AC Repair and Maintenance:

Purpose and Scope: To provide Plant Operations employees with a schedule for the proper procedures for repairing or replacing slip system air conditioners.

Policy: When performing repair or air conditioning replacement, the Plant Operations employee assigned to the task shall follow the steps listed below. Procedure: The responding Plant Operations employee will evaluate air conditioner to determine if the unit can be repaired or needs to be replaced. For Repairs

1. Notify occupants in building of AC repair or replacement and give estimate of AC shutdown time.
2. For all repairs of Freon holding equipment, including compressors, evaporators, condensers, reversing valves, and copper tubing, the Freon must be recovered using an approved recovery unit and proper recovery tank.
3. The Plant Operations employee must wear hand and eye protection through entire process.
4. After repair is made, evacuate and recharge system using Freon in recovery tank, if Freon is still usable.
5. Verify system charge and operating pressures to assure a complete charge.
6. Take temperature readings of return air and supply air to assure proper operation.
7. Verify thermostat operation in both heating and cooling.
8. Notify occupants in building of repair completion.

For Installing New Equipment

1. The AC Freon must be recovered using an approved recovery unit and proper recovery tank.
2. The tradesman must wear hand and eye protection.
3. The compressor must be removed from unit and all oil must be recovered.
4. A load calculation may need to be done if building has had major renovations to assure proper sizing of unit and copper tubing inside.
5. Se units in place and route copper tubing, thermostat wire, and main drain from indoor to outdoor units.
6. If secondary drain is used, run it in a conspicuous place to allow Plant Operations employees to watch for a drain blockage.
7. Braze all copper tubing and hook up all low voltage connections.
8. Place p-traps on main drain unless it is a blow through coil, such as a gas furnace.
9. Connect high voltage using proper size wire and breakers.
10. Verify operation of unit using return air and supply air temperatures and operating pressures.
11. Verify thermostat operation in both heating and cooling.
12. Notify occupants in building on thermostat operation and completed work.

➢ Chill Water System Isolation

Purpose and Scope: To identify the general procedure to isolate het chill water piping so existing systems can contain and maintain, to the extent possible, water in the chill water piping system.

Procedure: The following procedure identifies tasks to isolate the existing chill water system. Use this procedure as a guide, as applicable, for either partial or full isolation of the existing system.

1. Secure (turn off) chillers, primary pumps, and secondary pumps that are operating.
2. Secure (close) makeup water feed for chill water distribution system.
3. Secure (turn off) building HVAC pumps.
4. Secure (close) main isolation valves for return and supply main piping. Tag out and label valves that are closed (shut).
5. Tags should be places on all valves that are closed so they can easily be identified when valves are opened at the conclusion of the shutdown.
6. Close building entrance valves. *If valves do not shut off, or if you are unsure what valves are serving, close the building entrance valves for chill water serving respective buildings. Tag out all valves and note where valves have been closed, so that when system is ready to be put back online, no valves are missed.

➢ Chiller Start-Up

To formalize the operating procedure to start chillers.

Procedure: Starting Sequence

1. Turn on in manual, the corresponding condenser pump for the chiller to be started. Verify flow visually by the pressure gauge at the pump and the water movement in the tower. Currently, also open the makeup water float valve, if not open.

2. Turn on in auto, the cooling tower fan. The fan operates on a temperature setting of low speed on at 83 degrees. High speed comes on at 86 degrees and stays on in high until the entering condenser water temperature to the chiller reaches 78 degrees. At this point, the fan stops, and the sequence is repeated.

3. Verify that the secondary VFD pump(s) are in operation and pumping no less than 1600 gallons per minute. If not, adjust the speed to this minimum. Check the flow by typing in on the keypad “f l o w” and push the enter button. The (+) button increases the hertz to speed the pump motor up and the (-) button decreases the hertz to slow it down. (+) pumps more water, (-) pumps less water.

4. Manually turn on the corresponding chiller pump. Check the seals on the pump to ensure no leakage and verify flow at the pressure gauge on top of the pump.

5. At the chiller control panel, push the AUTO button. At this time, the chiller controller runs a series of diagnostic checks on the machine, verifies that the condenser pressure differential switch is made, the evaporator pressure differential switch is made. The computer also automatically starts the chiller oil pump, which runs in a pre-lube state for approximately thirty (30) seconds to lubricate the motor bearings. If all conditions are acceptable, the machine will start, and the cooling cycle will begin.

6. While at the chiller control panel, press the "Custom Report" button. This report has been set up to allow the operators on duty to monitor important operating information. Use this during startup to confirm proper operation and during hourly equipment checks to make sure that the machine is operating within its proper range. This information will let the operator know if more/less cooling is needed.

➢ Shutdown Procedure

1. To shut down a machine is basically the reverse of the startup with eth exception of the "Stop" button. When you push the "Stop" button, only push it ONE time. If you push it two times, it will put it into a panic stop mode, which will stop it at once. This is not good for the machine, due to it stopping under a loaded condition. Not only does it stop the machine at once, but it also stops the oil pump at this time, and this does not allow the bearings to be cooled down by the oil as in a post-lube normal shutdown. Only push the "Stop" button one time for normal shutdown. This will allow the machine to unload before turning off. It also allows the oil pump to continue to run for approximately one (1) minute in a postlude mode to further cool the motor bearings off. This adds a great deal of life to the bearings and the machine.

h. Pump Maintenance

Purpose and Scope: To provide a check list for in-house personnel to perform preventive maintenance on treated water circulating pumps located throughout the MUJ campus. Visual inspections should be performed weekly, as well as pump sequencing. All other tasks should be performed monthly or as needed.

Procedure:

1. Pump sequencing; turn pump off/on to check deficiencies and to keep moving parts lubricated.

2. Perform visual inspection.

3. Check lubrication, if applicable.

4. Check mechanical seals and replace, if needed.

5. Check motor alignment.

6. Check mountings and tighten bolts, if needed.

7. Check pump motor for vibration/temperature.

8. Check coupling.

9. Check gauge and replace, if needed.

i. Electric Motor Inspection

Purpose and Scope: To formalize the tasks and frequency for routine operational checks and inspections on motors for pumps, AHU fans, exhaust fans, and air compressors located on the MUJ campus.

Policy: The electric motor operations check, and inspection will be performed on Monday of each week. These operational checks include minor preventative maintenance that can be performed at the time of inspection. Any additional required maintenance will be forwarded to the Manager of Plant Operations. Procedure:

1. Motor sequencing; turn motor on/off to check operation

2. Visual inspection

3. Check lubrication if applicable

4. Check motor alignment

5. Check mountings; tighten bolts as needed

6. Check electrical wiring for tightness

7. Clean motor (i.e., dust, dirt)

8. Check motor condition; vibration/temperature

9. If 3-phase, check for balance 3-phase power

10. Check for over-voltage or under voltage

j. Variable Frequency Drives

Purpose and Scope: To provide guidance for in-house personnel to perform preventive maintenance on VFD located throughout the MUJ campus.

Policy: This routine preventive maintenance should be performed annually on equipment that has variable frequency drives. Performing this process will spot potential problems and allow for corrective action to avoid unscheduled downtime.

Procedure:

1. Clean drive; dust and other foreign materials can create corrosion, arcing, and cooling problems

2. Check motor resistance/connections

3. Verify all power connections; loose connection cause breaker to trip, fuses to blow

4. Verify power supplies for tolerances; power drifts cause shutdowns

5. Observe relevant wave forms for best operation

6. Verify signal wiring, shielding properly terminated and tight connections; improper shielding causes erratic operation

Public Health & Engineering:

Equipment	Capacity in KLD	Location
STP	350	Near Estate Office
	150	
UGR	200	Near DG Block
	80	GH
Total	**780**	

MANIPAL UNIVERSITY
JAIPUR

a. Operation of Water Treatment Plant.

Purpose and Scope: This procedure is applicable only to water treatment plant operation and maintenance.

Policy: Water treatment operator-is responsible to operate the water treatment plant as per the defined procedure. Any deviation must be communicated to the immediate supervisor, and subsequent action to be taken.

Procedure

1. Check the raw water and treated water tank level; every hour and record the same.
2. Check for the inlet and outlet pressure of PSF, ACF And SOFTENER (For Working Pressure 1.2 To 2 Kg / Cm2)
3. Check Hardness of inlet and out Water in each Shift and Must keep below the permissible limit and record the same quality control log sheet.
4. Backwash in PSF & ACF is to be done when differential pressure is 0.8 in inlet and outlet pressure or as and when require.
5. Regeneration of softener is to be done as per OBR (Output Between Regeneration) or as and when required as per outlet Hardness.
6. Check the FRC (Free Residual Chlorine) Level in outlet Water and maintain it to 0.2 ppm in treated water. Make sure There is no leakage in Hypo Dosing Line. And maintain the level of Hypo in Dosing Tank.
7. Quarterly Water to be tested from External Lab for the parameter mentioned in PCB Consent.
8. Follow all Safety Norms /instruction and NO Work Without PPE's

TREATMENT PROCESS:

1. Open Filter Feed Pump Valve.
2. Open Valve V-1 & V-2 OF Both PSF & ACF. Ensure Rest Other Valve Are Kept in Closed Condition.
3. Open Valve V-1 & V-2 of Softener. Ensure Rest Other Valves Are Kept in Closed Condition.
4. Switch On the FFP1/FFP2.
5. Check Inlet and outlet pressure of PSF, ACF AND SOFTENER.
6. Switch On HYPO Dosing Pump1/2.

STEPS IN BACKWASH PROCESS FOR PSF & ACF

- Switch off the FFP 1 OR 2.
- Open the Filter Feed Valve.
- Open Valve V-3 & V-4.
- Close Valve V-1, V-2, V-5, V-6.
- Switch on the FFP 1/2 And Drain Pump.
- After 20 min or till water gets clear or do is less than 0.8 switch of the FFP 1 OR 2
- This will complete the Backwash.
- Close the Valve V-3, V-2 & V-4.
- Open the Valve V-1 & V-5.
- Switch on the FFP1/2 And Drain Pump.
- After 10 Min Switch off the FFP1/2 This will complete the Rinse.
- Close the Valve V-3 V-4 & V-5.
- open the Valve V-1 & V-2 and PSF Wil be Ready In-Service Mode.
- Switch on the FFP1/2 This will make the plant in Service Mode.

Note: Keeping PSF in service mode Repeat the complete procedure for ACF also this will Complete the Backwash Procedure of ACF.

➢ REGENERATION PROCESS FOR SOFTENER.

1. Prepare 10% of Brine Solution (PI. Ensure That the Salt is completely Mixed in Water.)
2. Check the Outlet Water Hardness and record it before regeneration.
3. Close Valve V-1, V-2, V-3 & V-4.
4. Close Valve V-5, V-7, & V-5.
5. Switch on the FFP 1 or 2.

6. Complete Brine Solution is to be charged in Softener.
7. Switch Off FFP 1 or 2.
8. Close Valve V-1, V-2, V-3, V-4 & V-8.
9. Open Valve V-5 & V-7 For Slow Rinse.
10. Wait for 30 Min Complete Rinse.
11. Switch Off FFP1/2 (Rinse and Regeneration process is Completed).
12. Close Valve V-3, V-4 &V-5.
13. Open Valve V-1 & V-2.
14. Switch on FFP1/2 For Service Mode.
15. Check the Hardness of water at Outlet.

➢ Basic Trouble Shooting for Water Treatment Plant

- If suspended solid is seen in treated Water: Backwash PSF and ACF.
- If Hardness of raw water and treated water is same but not controlled for Regeneration of Softener.
- If any leakage Observed in hypo Dosing Line immediately attend the leakage and rectify it
- Any abnormalities observed report to on duty Supervisor.
- Follow and complete daily PM activities for smooth and no breakdowns in operation.

MANIPAL UNIVERSITY
JAIPUR

b. Domestic Water Supply System

RO WATER COOLER

STANDARD OPERATING PROCEDURES (SOPs) FOR DRINKING WATER

Purpose: Availability of safe drinking water is an important determinant of health. Provision of safe drinking water, hence, is crucial to ensure the health of student community and staff of the University. The purpose of this SOP is to ensure supply of pure drinking water to the campus and prevent contamination of drinking water in the campus area of the Manipal University Jaipur.

Scope: This standard operating procedure applies to plumbing and sanitation staff who will be accountable to the Engineering & Maintenance of the Manipal University Jaipur.

Responsibilities

It is the responsibility of the University Administration to appoint designated supervisor to perform hygienic inspection of the drinking water, its sources and reservoirs within the University premises. The Supervisor involved in hygienic inspection must have the relevant training and/or experience.

Procedure:

Inspection of Water: The supervisor will perform the inspection of the water on daily basis. He will keep record of the daily reports and compile monthly report based on these reports and submit it to the Plant Operation Office on the prescribed format attached as Appendix-I. He will inspect the water for its physical characteristics as enunciated below, and he will immediately inform the university administration if any discrepancy/disparity is pointed out: -

Turbidity: Turbidity is the cloudiness or haziness caused by individual particles which makes the water appear non-transparent. If many suspended solids are present in water, it will appear turbid in appearance indicating presence of impurities.

Color: Safe drinking water should be colorless. Dissolved organic matter from decaying vegetation or other inorganic materials can impart color to the water.

Taste and Odor: Most organic and some inorganic chemicals, originating from municipal or industrial wastes, contribute taste and odor to the water which may make it unfit for human consumption. Taste and odor can be expressed in terms of odor intensity or threshold values.

Temperature: The ideal temperature of water for drinking purposes is 5 to 12 °C - above 25 °C, water is not recommended for drinking. The increase in temperature decreases palatability, because at elevated temperatures carbon dioxide and some other volatile gases are expelled.

Sanitary inspections: The Supervisor will conduct weekly sanitary inspection of the water supply distribution system. Sanitary inspection includes a qualitative inspection of water system, including the source, transmission mains, treatment plants, storage reservoirs and distribution system. It allows water supply staff to uncover deficiencies, inadequacies and hazards such as overflows, contamination, pipe breakage etc. which could lead to contamination of water. The report of the inspections will be submitted to the office of the Director Administration on monthly basis on the prescribed format at Appendix-I to this SOP.

Measures: The University administration will address the general issues such as repair and maintenance, while it will approach health departments/laboratories for chemical and bacteriological issues on required basis. The following measures will be taken to ensure non-stop supply of pure drinkable water to the Campus and Hostels: -

Cleaning and De-Silting of the Water Tanks: Normally de-silting of the water tanks will be carried out on monthly basis.
Chlorination: Water chlorination is the process of adding chlorine (Cl. 2) or hypochlorite to water. This method is used to kill certain bacteria and other microbes in tap water as chlorine is highly toxic. During the winter season chlorination of the water will be done on quarterly basis.
These SOP will be strictly followed by all concerned and any changes, modifications and improvement herein will be recorded / updated in the revision history given below.

c. Operation of Sewage Treatment Plant

SEWAGE TREATMENT PLANT

➢ Recovery cleaning of Membranes.

Purpose and Scope: This SOP shall be applicable for Recovery cleaning of Membranes

Policy: Supervisor shall ensure that use mandatory PPE (Safety shoes, Safety belt, safety Helmet, Nose mask, Goggle and cotton, Rubber Gloves). Work permit for Membrane recovery cleaning should be approve from customer. Proper housekeeping should be required at Membrane tank area. Ensure Plant should be shut down when recovery cleaning of membrane to be start.

Electrical Person shall ensure that Membrane Blowers, Ras's pump and permeate pump should be shut down and apply Lock out and tag out on Both permeate pump, Ras's pump and MBR blower feeder. Isolate Membrane blower RAS pump and permeate pump from all energy sources.

Mechanical Person shall ensure that Mechanical Lock out and tag out should be apply on butterfly valve of permeate pump pipeline. Inspect lifting Chain pulley and check valid chain pulley test certificate.

Procedure: Ensure Membrane tank should be emptying before membrane lifting.

- Remove the permeate suction line from membrane header.
- Remove the air supply line from blower connected to membrane train.
- Attached membrane frame to upper portion of membrane cassette.
- A person to attached hook of chain pulley to membrane frame.
- Ensure Hook connection between chain pulley and membrane lifting frame should be tight properly.
- A Person Pull the chain from pulley to gradually lifting the membrane.
- After successful lift out of membrane, put membrane on appropriate area to wash with water.
- A Responsible person to remove modules from cassette one by one with proper modules removing puller tools
- After removing modules then washed with appropriate water stream.

- Ensure washed modules attached again to cassette with proper tools of modules according to membrane manual guidelines.

Note: The recovery cleaning of membrane should be done every six months and whenever High TMP Issue arrived.

➢ Preventive Maintenance of Air Blower

Purpose and Scope: This SOP shall be applicable for Preventive Maintenance of Air Blower

Policy: Supervisor shall ensure that use mandatory PPE (Safety shoes, safety Helmet, Nose mask, Goggle, Ear mud and cotton Gloves). Work permit for Preventive Maintenance of Air Blower should be approve from customer. Proper housekeeping should be required at Air Blower area. Ensure the blower shut down when Preventive maintenance work carried out.
Electrical Person shall ensure that Blowers should be energy isolated from panel and blower feeder should be shut down and apply lock out and tag out to blower feeder.
Mechanical Person shall ensure that Mechanical lock out and tag out should be apply on butterfly valve of air delivery supply pipeline.

Procedure:

- Clean the body surface of blower and blower motor by hand blower or manually.
- Check the condition of mounting and assembly bolts, if found any damages then take corrective action.
- Check foundation bolts for security of attachment and corrosion.
- Remove belt from pulley from both end of blower and motor.
- Open motor end shield from both end and check the bearing condition and do the greasing on it.
- Check shaft of motor from both end of Driven side and non-driven side.
- After Greasing and checking of motor, if found normal then close motor from both end and run shaft by hand to check vibration and abnormal sound.
- Check shaft of blower to identify abnormal sound and vibration, if found any issue then will arrest this issue by principal vendor.
- Remove filter from silencer of blower and clean the filter.
- Check Oil level of blower and if required then changed the oil.
- Check and clean air silencer of blower.
- Check lubrication of blower and do the grease changed of blower.
- After all work happened then ensure correct pulley mounting and pulley alignment.
- After completing of PM of blower then run blower for monitor abnormal sound and vibration.

Note: The Blower oil change after completing 1000 working hour of blower.

➢ Preventive Maintenance of PLC and MCC

Purpose & Scope: This SOP shall be applicable for Preventive Maintenance of PLC and MCC

Policy: **Supervisor shall ensure that** use mandatory PPE (Safety shoes, safety Helmet, Goggle, Ear MUF and Electrical Gloves). Work permit for Preventive Maintenance of PLC and MCC should be approve from customer.

Proper housekeeping should be required at PLC and MCC area. Ensure the Main Incomer feeder shut down when Preventive maintenance of PLC and MCC carried out.
Electrical Person shall ensure that All equipment should be energy isolated and Main incomer power source should be shut down and apply lock out and tag out to main incomer.

Procedure:

- Perform an overall visual inspection of PLC and MCC.
- Remove dust and dirt inside and outside of panel for all equipment by dry and compressed air.
- Ensure all bolting connections should be tight.
- Inspect all cables for tight connections and ample support.
- Check indicating lamp wherever applicable should be properly work, if any not working properly then replaced.
- Check and ensure PLC fuses should be work properly.
- Ensure that ventilation fan of PLC and MCC should be work properly.
- Clean the stationary portion of the switch gear by wiping with a clean cloth.
- Ensure circuit breaker. Protection relay and trip relays are in proper operating status.
- Ensure Double earthing connection should be properly connected.
- Perform Maintenance of contactor as recommended instruction furnished with the unit.
- Remove the covers of all panel devices where possible and check wiring for secure connection.
- Inspect control wiring for signs wear and damaged, replace wire wherever doubtful.
- Withdraw and clean all draw out components.

Note: Every 2-4 years replace the PLC battery. Every 5 years, replace the UPS.

➢ Lifting pump from tank.

Purpose and Scope: This SOP shall be applicable for Lifting pump from tank.

Policy: **Supervisor shall ensure that** use mandatory PPE (Safety shoes, Safety belt, safety Helmet, Nose mask, Goggle and cotton Gloves). Work permit for lifting the pump should be approve from customer. Proper housekeeping should be required at pump lifting area.
Electrical Person shall ensure that Pump should be energy isolated from panel and pump feeder should be shut down and apply lock out and tag out to pump feeder.
Mechanical Person shall ensure that Mechanical lock out and tag out should be apply on butterfly valve of pump pipeline. Inspect lifting Chain pulley and check valid chain pulley test certificate.

Procedure:

- Remove the hose pipe of pump from discharge end and lift it to upward direction.
- Connect chain pulley hook to pump chain based on proper guidelines.
- Ensure hook connection between chain pulley and pump chain should be tight.
- A person Pull the chain from pulley, so pump gradually lift to upper side of tank.
- A person holds the discharge end to restrict hose pipe movement.
- A person Pull the cable of pump when pump on lifting mode.
- Ensure the liquid material inside the hose pipe should be drain out in safe area.
- When pump properly lift out from tank then wash pump with water and sent outside for repairing work or dedicated storage area.

Note: The pump lifting required when pump suction line Chocked, or Motor winding damaged or any other problem in pump.

➢ Lifting Diffuser from tank.

Purpose and Scope: This SOP shall be applicable for Lifting Diffuser from tank.

Policy: **Supervisor shall ensure that** use mandatory PPE (Safety shoes, Safety belt, safety Helmet, Nose mask, Goggle and cotton Gloves). Work permit for lifting the Diffuser should be approve from customer. Proper housekeeping should be required at Diffuser lifting area. Ensure the blower shut down when lifting the diffuser work carried out.
Electrical Person shall ensure that Blowers should be energy isolated from panel and blower feeder should be shut down and apply lock out and tag out to blower feeder.
Mechanical Person shall ensure that Mechanical lock out and tag out should be apply on butterfly valve of air delivery supply pipeline. Inspect lifting Chain pulley and check valid chain pulley test certificate.

Procedure:

- Remove the hose pipe of diffuser from delivery end and lift it to upward direction.
- Connect chain pulley hook to diffuser chain based on proper guidelines.
- Ensure hook connection between chain pulley and diffuser chain should be tight.
- A person Pull the chain from pulley, so diffuser gradually lift to upper side of tank.
- A person holds the air delivery hose pipe end to restrict hose pipe movement.
- When diffuser properly lift out from tank then wash diffuser with water and check damaged or Leakage of diffuser and hose pipe.
- If hose pipe or diffuser PVC pipe found damaged, then replaced for same.
- Check hose pipe clamp whether found damaged then replaced it.
- Check and do the open and close the delivery valves.
- When all work to be done then follow same procedure mentioned above and gradually unload the diffuser in the specified tank.
- After successful unloading of diffuser in tank then carried out bubble pattern checking.

Note: The Diffuser lifting required when diffuser Chocked, or Delivery hose pipe found leakage.

d. Treated Water Supply Operating System

Purpose: To provide a systematic approach to providing of domestic water supply by specific procedures which are designed to enhance communication and safety and protection of all occupants affected by a loss of water supply.

Policy: Treated water from Water treatment plant is directly connected to overhead tanks of each building for Domestic Water supply through hydro pneumatic pumps. The water pressure in line should not more than 5 Kg/m2. To ensure of automatic cutoff the water supply of Pressure valve operation otherwise service or maintenance of valve ha to be taken care or replace the same.

Procedure: Daily routine of Plant operation Plumber will be checked the level of treated water level and keep monitoring of all OHT of all building and daily water reading of each OHT.

Note: To avoid any emergency of water supply Plant operation Plumber will be informed Manager and Engineer for alternate supply water or system for uninterrupted water supply in note of Head GS&A.

e. Campus Sewer Problems (Emergency)

Purpose and Scope: To identify the steps necessary to tend to Main Campus sewer systems when backups occur.

Procedure: When problems with the Main Campus sewers are received by Plant Operation, the Custodial Services and the Plant Operations departments will work jointly to resolve the problem by following the steps below.

1. A Custodial Services employee will respond to the matter with a plunger.
2. If they are unsuccessful in resolving the matter, they will contact Plant Operations who will use the sewer machine.
3. If the problem remains, the sewer camera is brought to the site to see where the problem is located. Lines blocks due to collapse or root intrusion will be replaced.
4. Plant Operations will again attempt to clear the blockage.
5. After the line is unstopped or repaired, Custodial Services will clean the area and apply chemicals to the area to control odors and disinfect. Barricades will be erected to deter pedestrians from the affected area.

f. Flush/Urinal/water Tap Troubleshooting

Purpose and Scope: To formalize the procedures for troubleshooting Main Campus Flush/Urinal/water Tap.

Policy: Plant Operations is responsible for servicing Flush/Urinal/water Tap.

Procedure:

1. Flush/Urinal/water Tap does not function – The control stops, or main valve is closed. Check if the handle assembly or relief valve requires replacement.
2. Insufficient volume of water to create siphon (flush) – Adjust the control stop for desired delivery or water.
3. Length of siphon is too short – Diaphragm assembly and guide are loose. Check if the by-pass assembly, including handle, require replacement.

4. Length of siphon is too long – Diaphragm assembly and guide not working properly. Ensure assembly and guide are hand tight.
5. Chattering noise in Flush/Urinal/ water Tap – Diaphragm is upside down or valve is clogged. Replace the diaphragm and clean valve.

Environment Health and Safety Policy

WASTE SEGREGATION YARD

a. Environmental Monitoring

Purpose and Scope: SIX-MONTHLY ENVIRONMENTAL COMPLIANCE REPORT OF STIPULATED CONDITIONS OF ENVIRONMENTAL CLEARANCE by CPCB/RSPCB approved lab. Environment (Protection) Act 1986 within permissible standard as per MoEF norms.

Policy: Following environmental components has been monitored and analyzed. 1. Ambient Air Quality 2. Noise Quality 3. Water Quality 4. Wastewater 5. Soil Quality 6. Stack Emission Quality 7. D.G Noise Quality

1.Ambient air quality monitoring has been carried out at three locations, to assess the ambient air quality of the project site. This will enable to have a comparative analytical understanding about air quality and the changes in the air environment in the study area with respect to the condition prevailing. The locations of the ambient air quality monitoring stations are with in campus.

2.Noise monitoring in the study area is to assess the present ambient noise levels at project site due to various construction allied activities and increased vehicular movement. A preliminary reconnaissance survey has been

undertaken to identify the major noise generating sources in the area. Ambient noise monitoring was conducted at three locations at the boundary of the Manipal University Jaipur.

3. Drinking WATER QUALITY MONITORING 2.5.1 Drinking water Quality Monitoring Locations Keeping in view the importance of drinking water as an important source of drinking water to the local population, sample of water was collected from near Manipal University Jaipur for the assessment of impacts of the project on the drinking water quality. Water sample was collected from the campus. The sample was analyzed for various parameters to compare with the standards for drinking water as per IS: 10500 for ground water sources.

4.Wastewater Wastewater Quality Monitoring Locations Sampling of STP water Samples are collected as grab sample and sampling forms are filled in as per the sampling plan.

Procedures: The preservative sample were properly added to preserve as per standard operating procedures (SOP) and stored immediately in ice boxes, which were ensured for appropriate temperatures. Soon after the completion of sampling, chain of custody sheets for the samples are filled in and then they were transported by road to SCS Enviro Lab, Jaipur for further analysis. Proper care was taken during packing and transportation of samples. All the samples reached the central laboratory within the holding times for different parameters. After ensuring the same the samples were forwarded immediately for analysis. The samples were analyzed as per the standard procedures specified in 'Standard Methods for the Examination of Water and Wastewater' Environment act 1986.

Diesel power generator sets used during construction phase should be of enclosed type to prevent noise and should conform to rules made under Environment (Protection) Act 1986, prescribed for air and noise emission standards “Low sulphur diesel (LSD) was used for running of DG sets during construction phase. The DG sets installed had adequate stack heights and were Enclosed type” DG sets which conforms the air and noise emission within permissible standard as per MoEF norms.

a. Rainwater and Ground Water Recharging:

Rainwater Harvesting Yard

Rainwater harvesting and groundwater recharging shall be practiced. The ground water levels, and its quality should be monitored regularly in consultation with the CGWA. Rainwater harvesting system has been constructed within the project. The RWH design and capacity are as per the specifications of Central Ground Water Authority. The Ground Water shall be utilized only in consultation with Central Ground Water Authority Groundwater is not used in operation phase and freshwater demand is met through HUDA supply water.

b. Green and Clean Energy

The Solar energy shall be used for lighting common areas and verifiable measures shall be adopted for energy conservation and water conservation. Several measures have been considered for energy conservation. CFLs and TFLs.

A report on the energy conservation measures should be prepared incorporating details about building materials & technology. R&U Factors etc. Details of energy conservation measures were submitted earlier. Several measures have been considered for energy conservation. Energy efficient fixtures which are been used in the project are: • Maximum utilization of natural light • CFL & T-5 lighting fixtures in the common areas and True lite fluorescent lamps in basements • Energy efficient motors and pumps • Appropriate design to reduce heat gain and loss • Roof-top thermal insulation • Glazing glass to reduce the u value as far as possible. In order to conserve energy, suitable building materials were used during construction.

a. Personal Protective Equipment

Purpose and Scope: To formalize the use of personal protective equipment for Plant Operations employees.

Policy: It is the policy of Plant Operations that the employees utilize the appropriate personal protective equipment when performing tasks that are potentially injurious to their safety.

Eye Protection shall be worn when performing or observing tasks that reasonably could be injurious to the eye. These tasks include, but are not limited to, welding or brazing, using or working on any furnaces, kilns or ovens, working with corrosive or toxic materials, using compressed gas including air, working with chemicals either in a

liquid or solid state, working with infectious or potentially infectious materials, milling, sawing, drilling, or any type of machining of any material, or repair of mechanical equipment. Safety glasses must be ANSI Z87.1 approved. Chemical goggles must be worn when there is a liquid splash, spray, or mist hazard. Hearing Protection shall be worn in areas deemed to have noise levels above limits establish by OSHA for the expected exposure frequency. Operations of this type include, but are not limited to, using saws, grinders, and work in the chiller and boiler rooms. Hand Protection shall be worn where applicable. Gloves shall fit to allow proper dexterity for the job being performed. Gloves contaminated with oils, chemicals, and grease should be discarded. Worn gloves (tears, etc.) should be replaced. Employees must wear appropriate rubber gloves when handling chemicals. Insulated gloves must be worn when working around heat. Respiratory Protection shall be worn to prevent the breathing of air contaminated with harmful dusts, fogs, fumes, mists, gases, smokes, sprays, or vapors when the issue cannot be eliminated by engineering control measures. Respiratory equipment must be approved by the MANIPAL UNIVERSITY JAIPUR Environmental Health and Safety (EH&S) representative. The EH&S representative shall determine the proper type of respiratory protection as well as any other constraints such as medical testing, fit programs, training, etc. Certain respirators require a good fact seal and require there be no facial hair to interfere with the fit.

b. Orange Safety Vest Use

Purpose and Scope: To aid employee visibility and safety while performing work from a road or service drive.

Policy: Orange safety vests are to be always worn by Plant Operations employees when performing work on a road surface (including the curb) and service drives. Vests are not required while operating ride-on equipment, such as riding lawn mowers, tractors, etc. However, safety vests are required once an employee dismounts riding equipment to perform work on the surface of the road, as indicated above.

c. Tool Accountability

Purpose and Scope: To provide accountability for tools provided by MANIPAL UNIVERSITY JAIPUR for each employee in Campus Operations.

Policy: Listed below are procedures used for tool control in Plant Operations.

Initial issue: Employees that were issued tools before this policy was in effect, must provide a list of tools with their signature, acknowledging their receipt. All new employees will be provided with tools to perform their craft. They must sign for receipt of these tools. Lists of tools for each employee will be kept on file in the Store Office.

Audits: The Administrative Assistant will monitor all purchase orders and credit card receipts for tool acquisitions and report these findings to the Plant Operations Manager so that tool accountability will not be compromised. Each employee should arrange their tools so that they can visually inventory them regularly. Tools must be secure either in a toolbox or truck. Any stolen item/tools should be reported to their Supervisor and the MUJ Campus Operations Manager. This will release them from any liability. Each employee's tools will be audited by the Supervisors twice a year (May and December) to ensure tool accountability.

d. Equipment Loans

Purpose and Scope: To formalize Plant Operations procedures for loaning equipment. This equipment is owned by the MANIPAL UNIVERSITY JAIPUR and is to be always available for its use.

Procedure: It shall be the policy of Plant Operations to not loan equipment or supplies to individuals. Loans to other MANIPAL UNIVERSITY JAIPUR departments and governmental agencies such as school districts for official business will continue. This type of loan shall be approved and recorded in writing by the Manager of Plant Operations, including a return schedule. Equipment refers to hand tools, power tools, vehicles, and similar items. Supplies are items such as tables, chairs, barriers, trash containers, and any other item purchase by Manipal University Jaipur.

e. Ladder Use

Purpose and Scope: To establish a safe work practice when working on extension ladders and stepladders

Policy: This policy will improve safety when employees are working on extension ladders or stepladders and cut down or eliminate work related injuries in the workplace.

Procedure:

1. It is the responsibility of each department to inspect their extension ladders and stepladders for any kind of damage that could occur for transporting, rough handling, or worn out from everyday use.
2. Any fiberglass ladder found to be unsafe shall be removed from the work area and turned in to Environmental Health and Safety for proper disposal.
3. There will be NO wooden ladders allowed to work on any electrical circuit at MUJ.
4. All fiberglass ladders shall be free from sharp edges, wear compression failures, or other irregularities.
5. All portable ladders shall have uniform step spacing of no more than twelve (12) inches. Steps shall be parallel and level when the ladder is in position for use.
6. A single ladder shall not be any longer than thirty (30) feet.
7. Two section ladders shall not be longer than sixty (60) feet. All ladders of this type shall consist of two sections, one to fit within the side rails of the other and arranged in such a manner that the upper section can be raised and lowered.
8. Extension ladder safety. Ladder must extend thirty-six (36) inches over the roof landing and the distance from the wall to the base of the ladder must be approximately one quarter of the vertical distance from the bottom of the wall to the top support.
9. Stepladders should not be any longer than twenty (20) feet. Stepladders should have a metal spreader or locking device of sufficient size and strength to securely hold the front and back section in the open position.
10. Face the ladder to climb using both hands. Never carry tools or equipment in hand while climbing or descending a ladder.

11. If tools or equipment are needed, a hand line in pocket or over shoulder should be used pulling the tools and equipment up after reaching the work area.
12. In certain situations, when a ladder cannot be tied off, two people are needed to make sure the person on the ladder can ascend and descend safely.
13. Never lean out from the ladder.
14. Always have at least one person at the base of the ladder.

k. Ladder Inspection

Purpose and Scope: To ensure that personnel have the knowledge to properly inspect ladders and when to remove them from service.

Policy: This policy will improve safety when employees are working on extension ladders or stepladders and cut down or eliminate work related injuries in the workplace.

Procedure:

- Observe general condition of the ladder. It should be clean, dry, and free from oil, mud, etc.
- Visually inspect the ladder for cracks.
- Check for missing, bent, or loose rungs.
- Ladders should never be painted. Paint often hides dangerous defects.
- Ensure footpads are securely fastened. All ladders not permanently attached must have slip resistant rubber or plastic feet.
- If a ladder is damaged, notify supervisor for replacement and immediately remove it from service.

l. Electrical Safety

Purpose and Scope: To familiarize employees with electrical safety.

Policy: All Plant Operations employees who deal with electricity must follow the steps outlined below to ensure the safety of themselves and others working within the vicinity.

Procedure:

1. Whenever possible, complete the repair when the area is closed or at its lowest occupancy level.
2. Notify potentially effected staff, faculty, and students of power outages. Informing other will prevent mistakes or someone turning the breaker back on.
3. Turn power off at eth breaker before starting any work, regardless of voltage. Breakers must be properly labeled to maintain safety.
4. Keep track of wires. Even the most careful employee can get tripped up in loose wires.
5. Cap all exposed wires.
6. Double check your work before tuning the power back on.

7. Inform staff, faculty, and students that work is completed. *In the event of an accident, turn off the power, if you can, but if you can do so quickly and safely, free them from the current. Use good judgment in attempting to rescue the individual using every precaution not to get caught in it too.

m. Fire Extinguisher Inspections

Fire Extinguisher

Purpose and Scope: To detail the Plant Operations process for mandated monthly fire extinguisher inspections.

Policy: Every month Plant Operations shall visually inspect all portable fire extinguishers. If the extinguisher fails to meet any of these criteria, it must immediately be replaced.

Procedure: The inspection shall include the following items.

1. Is the fire extinguisher in place?

2. Is there any visible physical damage?

3. Is the tamper proof seal in place?

4. Does the gauge point to the green area of the dial?

J. Fire Alarm Battery Testing

Purpose and Scope: To ensure that fire alarm panel batteries will hold a charge under load for at least two (2) hours. **Procedure:** Plant Operations will locate batteries in the building and disconnect batteries from charging unit. Using fire and security load tester and voltmeter, place meter on battery to test for starting voltage. If voltage is equal to voltage on batteries, then proceed with test. Connect red lead from load tester to positive battery terminal. Next, connect black lead form load tester to negative side of battery terminal. Ensure that switch for load tester is set to 12 or 24 volts depending on battery voltage. Watch voltage meter. If battery voltage drops below total voltage listed on batteries, remove voltage meter and test individual batteries while load tester is still connected. Batteries with voltage below listed voltage on battery are bad. Remove and replace with new battery. Disconnect meter and load tester and store properly. Dispose of removed batteries properly.

n. Fire Alarm Systems

Purpose and Scope: To formalize Plant Operations, Housing, and University Security on their department's level of responsibility.

Procedure:

1. Plant Operations is responsible for all fire alarm systems. These responsibilities include, but are not limited to, programming the alarm systems, testing, and making any repairs, which includes sensing devices, smoke detectors, pull stations, strobe lights and horns, repeater boxes, and backup power supply, etc.

2. When a fire alarm is received, Plant Operations will dispatch an employee to the location. The responding individual investigates the problem and determines what action is to be taken. If no smoke or fire is detected, the employee will then request a reset.

3. If the fire alarm system will not reset, and no problem is found with the fire alarm panel or devices, a watch order is placed on the building, for periodic checks on the building until the system is reactivated.

4. Periodic checks will be conducted by University Security.

o. Fire Alarm Indicating Devices – Supervised

Purpose and Scope: To formalize Plant Operations procedures for ensuring fire alarm remote annunciators operate correctly in the event of a fire.

Policy: Plant Operations is responsible for maintaining all fire alarm remote annunciators are operating properly. Fire alarm remote annunciators are clear visual devices which light up to help you locate troubled or alarming devices.

Procedure:

- Locate devices throughout building.
- Visually inspect devices to ensure they are attached properly to wall or ceiling.

- Look around device to ensure there are no obstructions that will impair the device from operating or the ability to access the device.
- Initiate repairs on any problems found.

p. Smoke Detector Test

Purpose and Scope: To formalize Plant Operations procedures for ensuring smoke detectors operate correctly in the event of a fire.

Policy: Plant Operations is responsible for maintaining all smoke detectors in working order. Procedure: Follow the steps listed below to thoroughly test smoke detectors.

1. Locate smoke detector in the building.

2. Locate light/LED on unit and see that it is either flashing or not lit.

3. Using a can of fire alarm testing smoke, hold approximately eighteen (18) inches from the detector and spray directly at the detector for two (2) seconds.

4. Wait for light to change to solid red or flash red.

5. If light does not change within sixty (60) seconds, spray detector again for four (4) seconds.

6. If detector still does not go into the alarm mode, do one of the following: a. Check to see if detector has power. If power is present, repeat steps 3-5. If no power is present, determine cause, reapply power, and repeat steps 3-5. b. Replace the detector if power is present, and detector has failed the test twice per step 6a.

q. Maintenance of Fire Suppression Equipment

Purpose and Scope: To provide guidance in maintaining fire suppression equipment.

Note: All work is to be done in accordance with state regulations.

Procedure: Before taking fire equipment out of service, plan the shutdown for a time when the facility is closed or at its lowest occupancy level. Have everything needed before impairing fire protection equipment, i.e., excavating, pipe plugs, repair parts, and necessary personnel. Plan to use temporary fire protection, such as extra fire extinguishers, charged fire hose lines, and temporary sprinkler protection. Setting up temporary sprinkler protection is particularly important during prolonged impairments. A 2 ½ inch hose can run from the hydrant to the two (2) inch drain. Notify Security that the fire suppression in a particular building is secured for repairs and the date and time the system will return to service. Also make sure the building occupants of the planned

impairment so they can prepare to handle any potential emergency if the sprinkler system is restorable, either in whole or in part, assign someone to restore the system promptly in the event of a fire. After the impairment, promptly restore fire protection equipment to automatic service. If sprinkler protection was impaired, conduct a two (2) inch drain test at the sprinkler riser. Lock sprinkler valves in the open position. Reset the alarm system and notify Security that the system is fully restored and operational. Notify building occupants that the fire protection system is fully operational.

r. Roof, Wall Floor and Ceiling Maintenance

Purpose and Scope:

To formalize Plant Operations with proper procedures to leak test a roof, Roof Wall Floor and Ceiling.

Policy: When performing roof maintenance or making minor replacement to a roof system, the following steps shall be followed by the tradesman assigned to the task to examine for leaks.

Procedure:

1. Maintain records (i.e., installation, inspection records, repairs, original drawings, specs)
2. Inspect after severe weather
3. Repair correctly, using approved roofing contractors
4. Keep roof clean, debris-free
5. Keep metal, such as flashing, in good condition
6. Keep masonry in good condition; examine walls and coping, repair as needed
7. Maintain rooftop equipment (i.e., LA Stand, pedestals, equipment stands, antennas, etc.)
8. Eliminate any spillage of coolants, grease, etc.
9. Maintain roof coating; recoat any cracked, flaked, blistered or work areas
10. Minimize roof traffic
11. After repairs are complete to a roof, roof drain, or metal flashing, test the area thoroughly with a water hose to make sure the leak has been repaired. Replace ceiling tile if damaged and clean up any mess that occurred during repairs. Contact the Manager for Plant Operations if carpet has been wet for more than one time.

Standard Operating Procedure for maintained of building in different season /weather for cracks choked ad drainage system in MUJ campus.

Building demand continue up keeping, repair works or Up gradation work for floor wall and ceiling. Whenever it happens painting, rack repair, floor repair surrounding maintenance are done is called building maintenance.

- Responsibility of maintenance Dept to ensure that ensure that the work is carried out as per the define procedures
- Responsibility of maintenance supervisor to maintain the proper records
- Personnel and Administration dept to ensure that proper housekeeping is maintained in and around the Campos
- Person and Administration dept to maintain proper records

Painting:

- Carryout the painting work after any modification in civil work
- Carryout the painting in campus at least once in three years
- Use PU paint for panting in Campus area and repair the flooring with epoxy grout and paint
- An outside agency shall carry out the painting work under supervision of Engineer
- Paint the MS structure with one coat of Lead oxide and two coat of oil paint to avoid rusting as and when required. However, the painting is carried out at least once in two years.
- Piping shall be maintained with one coat of red oxide and two coat of oil paint to avoid rusting's and when required, however, the painting shall be carried out at least once in two years, Piping shall be painted as per defined color code **Annex**
- Record of the painting as maintained as per **Annex**
- Leak Checking of roof
- Check roof visually for any damage at least once in a year before the commencement of the April Month
- If required repairs shall be carried out by maintenance dept with Help of Project Vendors and consultant.
- Record Shall be maintained as in **Annex**
- Leak Checking of Pipes process pipes and drainage
- Underground drains and all pipes including process pipes of service floor area, are checked and cleaned as and when required Checking shall be carried out at least once in the year before the commencement of April Month
- Records are maintained as in **Annex**
- Crack checking of building /False celling/Flooring
- In the campus cracks in the wall and false cleaning shall be checked visually into month
- If required repairs shall carry out by the mainbrace department
- Record the inspection details as per theAnnex-5
- Check/Condition checking of Epoxy/Kota stone Flooring
- All Flooring of MUJ campus flooring shall be monitor for Epoxy at least once in a year or more Modifications
- Condition of the Kota Flooring once in six Month and necessary repairs shall be careered out by maintenance department as per the requirement.
- **Record As per maintained as the Annex**

Sr. No.	Name of the Area	Inspected On	Observation	Corrective	Action taken	Inspection	Due On	Remark
1								
2								
3								
4								

GENERAL PROCEDURES

s. Hiring of Employee and employee preparation

Procedure: Please follow the steps listed below regarding hiring guidelines.

1. Applications must be received by MANIPAL UNIVERSITY JAIPUR Human Resources department through requirement by Engineering and Maintenance department to CAO (GS & A) with approval of management. At this point in the hiring process, applicants are subjected to background checks. Eligible applicants are submitted to the hiring authority. Human Resources will not rank the candidates and they do not make the selection.

2. The Manager of Plant Operations will screen applicant qualifications against the job description and identify strengths and weaknesses.

3. The Manager of Plant Operations will separately interview candidates and make their recommendations Col. Vipul Mathur, Head GS&A 9116613636.

4. After selection we will forward that new employee to Quests Ltd. For completion of joining formalities. They will provide uniform, badge, tools and give general instructions to the new joined for the working.

5. All the statutory rules and regulations will be explained by the Quess.

t. Building Occupant Notification /Major works

Purpose and Scope: Proper procedure to follow when building occupants need to be notified due to building closure or building maintenance that will cause a major impact on occupants.

Policy: Advance notice should be given to building occupants, when possible, unless an unforeseen emergency has occurred.

Procedure: Please follow the following steps in notifying building occupants.

1. Any Plant Operations Director, Manager, Supervisor, or Assistant/Secretary shall communicate any interruption in normal building conditions to the building occupants through the building occupation notification procedure in the Plant Operations office.

2. Notifier shall send an email to Plant Operations office with the message and the building to be notified.

3. Give plenty of time for notices to go out to occupants (a minimum of two weeks would be preferable). Notice will be sent out upon receipt and again two (2) days prior to the date of closure, shut down, etc. 4. Building occupants and Plant Operations Director, Manager, Supervisor, Assistant/Secretary, Director and Assistant Director of AES, Director of EH&S, Vice President of Business and Finance, and the Dean/Chair/Secretary of the Department/Building will be notified of any building closures, or significant utility outages dues to planned preventative maintenance, maintenance, or problems.

5. All notifications shall be through email groups, which are kept current by the Plant Operations office for this purpose.

u. Protocol for Entering Faculty Housing

Purpose and Scope: To provide procedures for Plant Operations employees to properly announce their presence prior to entering faculty houses rooms for the purpose of performing work requested.

Policy: The procedures below have been developed to avoid uncomfortable situations.

Procedure:

1.Push Doorbell twice. Wait ninety (90) second before knocking.

2. If door already unlock, open the door slightly.

3. Announce your presence.

4. Turn lights on and enter room.

5. Place a maintenance tag on the doorknob to show that someone is working in the room. In the event of an uncomfortable situation, the employee will politely exit the room and return at another time, escorted. The maintenance tag will be left on the doorknob updating the student if the work remains in progress or has been completed. If maintenance is required after hours: The on-call employee must provide MUJ identification (if not in uniform) and be accompanied by either a Resident Assistant or University Security for safety and liability issues.

v. Recycling

Purpose and Scope: As part of the Main Campus “Sustainability” mentality, we provide recycling bins for paper in each building.

Procedure: Main Campus will follow the guidelines listed below as part of the “Sustainability” mentality. Paper – recycling bins designated for paper are in each building. All the trash must be collected in the waste segregation

yard and then it must be segregated in scrap metal waste yard, paper waste, bio-degradable, non-biodegradables, wood waste

a. Classroom / Lab Renovation

Purpose and Scope: To formalize a university policy that provides direction in room renovation ensuring all required personnel are properly informed.

Policy: When a renovation of an area is being requested, and prior to initialization of a work order, through the mail/Filing system, for a room renovation, a Project Request Form must be completed and returned to the Director of Plant Operations.

Procedure: When any renovation is being demanded by the faculty, the engineering and maintenance team and faculty jointly visit the area and finalize the layout and to understand the requirement and submit the BOQ (Bill of quantity) to CAO. CAO forward it to the faculty for getting the approval from higher authority. After approval, the work order has been issued to the vendor to start the renovation. After renovation completion the Engineer and Maintenance will hand over the renovated area to the faculty.

b. Lifting of Material and Equipment

Purpose and Scope: To prevent injury to Plant Operations personnel through proper lifting techniques.

Policy: Plant Operations personnel shall use the techniques (Workforce Safety) listed below to avoid injury. Using these lifting techniques will help employees reduce the risks of back injury.

1. Always check the weight of the load before lifting.

2. If the load seems too heavy, get help. Do not lift anything that is too heavy!

3. Position yourself as close to the load as possible. The further the load from the body, the heavier it will be on the spine.

4. Assume a wide base of support, with legs shoulder width apart and one foot slightly ahead of the other. A wide base of support will ensure a better balance and keep your knees from getting in the way.

5. Keep the normal curve in your spines. Keep your head up!

6. Keep stomach muscles firm. This will prevent you from overarching your back while lifting.

7. Use stomach-controlled movements; do not twist, move feet first. Rapid or jerking motions can place increase demand on the back.

c. Plant Operations Normal Workday

Purpose and Scope: To formalize and define the normal workday for the Plant Operations Department.

Procedure: The normal workday for the Maintenance is Working Days from 9:00am to 6:00pm. Employees should be in their shops and ready for work at 9:00am. There are times that employees will be required to temporarily work different hours and/or different workdays so that University functions will not be interrupted. This will be done in accordance with MANIPAL UNIVERSITY JAIPUR policy regarding this change of hours and must be approved by the Manger of Plant Operations.

d. Storage facility for employees

Purpose and Scope: To define the operation of Plant Operations storage facilities.

Policy: The Groundskeeper storage facilities will be kept secure and managed by employees of Plant Operations. Building Maintenance Standard Operating Procedures. The Plant Operations storage facilities will be accessed only by people assigned to the Plant Operations. It is the responsibility of the assigned individuals to keep these areas clean and stocked. In the event of an emergency, or access after business hours, a University Security Office/ Facility Team will escort the individual to the storage facility.

e. Identifying Underground Utilities for Construction Projects

Purpose and Scope: To define a procedure to be used before any construction that disturbs the ground on the MUJ Campus to locate underground utilities

Policy: On the MUJ Campus, there are several types of underground utilities including potable water, irrigation lines, sanitary sewers, electric cables at various voltages, internal communication lines, optical fiber lines and LPG gas line.

Procedure: To minimize the risk of an accidental cutting of a utility line, the following items must be done. All terms used in this procedure are defined the way they are defined in the MUJ. All design firms are to have all underground utilities marked on the construction drawings. Before any digging is done, the excavator shall notify the Free Access Notification System to identify all underground utilities that they are marked. Notification must be between two and five (2-5) working days from when excavation is to begin and the area to be excavated needs to be marked on the ground with white paint or a drawing provided showing the area to be marked. Also, before any digging is done, the excavator shall notify the MUJ Plant Operations office at who will arrange to mark MUJ-owned utilities.

Notification must be between two and five (2-5) working days from when excavation is to begin and the area to be excavated needs to be marked on the ground with white paint or a drawing provided showing the area to be marked. MUJ Plant Operations office will issue work orders to Plant Operations and Campus Planning to provide the marking of underground utilities noting the forty-eight (48) hour deadline. Services/Telecommunications to provide for marking of underground utilities, noting the forty-eight (48) hour deadline. All such work orders shall be tied to a project called Utility Stakeouts to allow total costs to be identified for this procedure. MUJ Plant Operations will mark MUJ utilities. This internal procedure needs to be referenced on all construction contracts, but it does not preclude the contractors' responsibilities to follow the building design and construction standards.

f. Contractor Access to Secured Areas

Purpose and Scope: To establish consistency and quality customer service when contractors require access to a secured area.

Procedure: Please follow the following steps when contractors request access to secured areas. 1. Contractor calls requesting access to a locked mechanical room, roof, or other secured areas. 2. Transfer the call to the Manager of Plant Operations, and request they give access to the secure area.

EMPLOYEE ISSUES

a. Key Control

Purpose and Scope: To manage daily key issuance and establish responsibility for all Plant Operations employees.

Policy: Keys will be kept secure in a locked key box in security office or physically in the possession of the assigned employee. Keys should never be placed on carts, desks, or any place other than in the key box or the employee's physical possession. Keys shall not be removed from the ring or loaned to another person. Persons who lose keys must report such a loss to the Manager of Plant Operations immediately. Employees who lose keys may receive disciplinary action and pay for replacement amount.

b. Attire

Purpose and Scope: Outline the dress requirements for Plant Operations personnel.

Policy: All full-time personnel at Plant Operations, up to and including the level of Manager, excluding office staff, will wear, always while working, a full uniform. This is to provide appropriate identification of workers who may be accessing a wide variety of locations on campus in which they may not be known. Furthermore, it improves campus security. It also identifies them as University employees versus a contract employee in case of an issue. Plant Operations will provide all its full-time employees with sets of uniforms either the MANIPAL UNIVERSITY JAIPUR or Services prover logo and the individual's real name or an employee Id card.

c. Smoking Policy

Purpose and Scope: To provide a smoke free environment, MANIPAL UNIVERSITY JAIPUR has been designated as a non-smoking campus. This policy is applicable to all employees, clients, contractors, customers, vendors, and visitors to MANIPAL UNIVERSITY JAIPUR facilities and grounds.

Policy: MANIPAL UNIVERSITY JAIPUR prohibits smoking on all its property. For the purpose of this policy, "smoking" is defined as the carrying by a person of a lighted cigar, cigarette, pipe or other tobacco products; to include any type of Vapor products. Employees, clients, customers, contractors, vendors, and personnel who violate this policy will be reminded of the smoke-free policy. Employees are required to comply with the provisions

of this policy. Supervisors are responsible for ensuring that employees do not smoke while on campus. Appropriate disciplinary action will occur if an employee violates this policy. No smoking Tagging has been placed on the appropriate places.

d. Handheld walkie talky / Mobile Use

Purpose and Scope: To provide Plant Operations employees a means of communication and quicker response to customer service.

Procedure: All radios should remain on the Command Channel. Each department at Main Campus has a specific identification number assigned them. Employees may contact each other by radio by using identification numbers or first names. A list of identification numbers and names is provided below.

When working during an emergency, all mobiles should be on Operations. All security persons are having handheld radio walky-talky and mobile with them.

SOPs for Emergency Procedures of MUJ Infrastructure

Purpose and Scope: To formalize Plant Operations guidelines for emergency situations.

Policy: Report all problems immediately to the attention of the Plant Operations personnel and MUJ Public Safety. All pertinent numbers which may be required are listed below.

Duty should be notified regarding all alarms and call outs at 7727006793/94 for (24x7).

- Arvind Kumar-7728885732 (24x7)
- Pushpendra Sharma-9116613642 (24x7)

Procedure: Emergency situations occurring during normal business hours (Monday to Friday, 9:00am to 6:00pm) should be brought to the immediate attention of the Plant Operations office at 7727006793 for (24x7).

In the event of an emergency that arises at Main Campus after normal business hours, refer to the list below for the appropriate person to call.

- Duty Mobile for Power 7727006793/94 for (24x7).
- Supervisor (Bansi Kumawat)-9460507185
- Arvind Kumar-7728885732
- Pushpendra Sharma-9116613642

The responding officer should assess the situation and notify the appropriate personnel to implement a plan of action to resolve the situation. In case of fire or damage, all personnel on the list below should be contacted in addition to the Head General Services and Administration.

Housing issues dealing with families, notify:

Santosh 9116613647/Arvind Kumar-7728885732 cell /Pushpendra 9116613642 cell

All other situations, notify:

Col. Vipul Mathur, Head GS&A 9116613636 cell

- ## Emergency Call-In Procedure

Purpose and Scope: To formalize Plant Operations guidelines in calling in emergency building maintenance problems.

Policy: During normal business hours (Working Days, 9:00am to 6:00pm ET) report emergency maintenance requests to Plant Operations at 7727006793/94. Any other issues should be submitted through the WhatsApp group/Mail System.

After Hours (nights and weekends): In the event of Life Safety issues, (i.e., fire, storm, collapse, crowd behavior, etc.) refer to the MANIPAL UNIVERSITY JAIPUR Emergency Action Plan. In the event of an emergency issue related to building maintenance, (i.e., utility outage, water leaks, no hot water, interior electrical problems, heating/air issues, elevators, locks, etc.) the requesting authority should follow the procedure outlined below:

1. Call Duty Electrician at 7727006793 cells.

2. If no answer, wait ten (10) minutes, then call the On-Call number Arvind Kumar-7728885732.

3. If no answer, wait ten (10) minutes, then call Pushpendra 9116613642. cell.

4. Should there still be no response, wait ten (10) minutes, then call Col. Vipul Mathur, Head GS&A at 9116613636

a. Emergency Shutdown of buildings other than housing in Non-fire Emergency situations:

Subject: Emergency Shutdown of Buildings other than Housing in Non-Fire Emergency Situations.

Purpose and Scope: To establish procedures for emergency shutdown of buildings other than Housing in the event of a non-fire emergency.

Examples of non-fire emergency situations include:

1. Loss of electricity, heat, AC, water, or other essential utilities.

2. Failure of mechanical equipment such as HVAC systems and emergency generators.

3. Flooding, heavy rain and windy season, earthquakes, or other natural disasters.

Procedure: The following list is by no means complete, but it gives general steps to ensure a safe shutdown of Main Campus facilities in the event of a non-fire related emergency.

- Alert Manager of Plant Operations naming Santosh, Arvind and Pushpendra.
- The Manager of Plant Operations will contact the effected department administration and University Police (if applicable) of the shutdown. Notification from management reduces questions, saves time, and lessons confusion or panic.
- Plant Operations will instruct regarding action required, to wit: Service, Out of Order, Evacuate Building, Seek Shelter.
- Whenever possible, provide an estimated time services will be restored.

b. Severe Weather Condition:

Purpose and Scope: To formalize the procedure that Plant Operations Management implements to prepare for impending severe weather and coordinate the post-storm activities. This procedure will save valuable time in making decisions and preparations for an impending disaster and in the repair/cleanup process afterward. All employees will be able to react in a positive manner by knowing beforehand their individual responsibilities and the total process involved in the recovery effort.

Procedure: The following sequence of events is to take place in anticipation of and preparation for an approaching hurricane and post-storm recovery activities.

Beginning of Heavy Rain, Season

- Review and update Severe Weather Plan.
- Review and update all contact lists, including employees, contractors, and consultants.
- Assign Damage Assessment Teams List with building/area assignments.
- Implement inventory procedure to keep diesel, gasoline, and fuel oil tanks at least ¾ full.
- Confirm shelter locations with Environmental Health and Safety Coordinator.
- Check condition of all equipment (generators, mud pumps, backpack blowers, chainsaws, chippers, extractors, dry/wet vacuums, etc.) and stock extra parts. Perform equipment repairs where needed.
- Perform visual inspection of underground lines and any potential limb.
- Inventory the emergency equipment, including rain gear, flashlights, clipboards, handheld radios, and flagging tape.
- Check all roof drains for debris.
- Initial Recovery Stage

- No individual work orders will be kept. Once it is possible, work orders will be created.
- The exact location of the work performed is critical to any future cost recovery.
- The work should fall into one of the three broad FEMA categories:
- Category A – Debris Clearance
- Category B – Emergency Protective Measures
- Category E – Damaged Building and Equipment

- It is the responsibility of the Engineering and Maintenance Team to organize the assessment
- The teams will collect damage information at each location. This is done immediately after it is safe to return to the facility.
- The Team is responsible for inspection the entire facility.
- While on site, all damaged trees and other hazards will be marked with barricade tape, and damaged exhaust fans, vents, etc., should be marked with bright colored spray paint, with the exact location of damage noted.
- Once the assessment is complete, the Team Leaders will submit it to the CAO (Head GS & A). Work orders will be created and assigned to Plant Operations employees and arrangements made with contractors, as needed.

c. Power Outage

Purpose and Scope: To formalize guidelines to be followed when an unplanned power outage occurs.

Policy: Follow the guidelines provided and keep customers informed with the most accurate up-to-date information possible. Continue to provide the most prompt and courteous customer service possible.

Procedures:

1. Power outage has occurred. Call Plant Operations at 7727006793, regarding the area affected by the outage, campus-wide, or confined to one to two buildings, and which ones are affected.
2. Upon determining whether it is a Plant Operations problem or an incoming 33kv RICCO MUJ Feeder JVVNL Power issue, inquire as to how long the estimated time is for the outage. Only estimates provided by Plant Operations or JVVNL for clearing the outage will be communicated.
3. If this is a problem due to a 33KV incoming feeder outage, Plant Operations will contact JVVNL at the Distribution Center at and inquire as to the problem and the estimated time of reconnection.
4. During this time, one person in Plant Operations should be helping to answer the phone, informing customers of what is factually known.
5. Plant Operations is to inform the Head GS&A of all information received from JVVNL immediately.
6. Head GS&A is to keep upper management informed of significant information during the outage.
7. If it will be a prolonged outage, the Head GS&A would request University Relations personnel to put out a campus-wide message regarding the outage.
8. Debriefing to follow the outage at the Head GS&A discretion.

d. Emergency Power

Purpose and Scope: To formalize procedures to switch buildings to emergency power during an extended power outage.

Policy: In the event of a Main Campus power outage lasting longer than fifteen (15) minutes is expected, the emergency power must be manually engaged by switching the manual transfer switch disconnect.

Procedure: The manual transfer switch must be switch to the emergency power position in order to feed emergency power. If the power outage is expected to last longer than fifteen (15) minutes, the emergency power feed can be energized by following the steps below. This procedure shall be performed by the Plant Operations employee assigned to the specific building.

1. Manually turn the well hand/off/auto (HOA) control switch to the off position.

2. Manually switch the manual transfer switch to the emergency power position.

3. Turn the well control HOA switch on and verify pump and well operation.

4. After normal power is restore, turn the well control HOA switch to the off position.

5. Switch the manual transfer switch to the normal power position.

e. Emergency Generator Inspection

Purpose and Scope: To ensure the reliability of the emergency generators. These generators will, in the event of a power failure, start and switch to emergency power and provide safety lighting. Procedure: On a weekly basis, each generator has all fluids checked to ensure proper levels and are adjusted as needed. These fluids include oil, water/coolant, batter water/charge, and fuel level. Additionally, each generator is run for approximately fifteen (15) minutes. During this time, the alternator pumps, coolant temperature, and visual check for leaks is performed.

f. Generator Hook Up and Operation for the event

Purpose and Scope: To provide stand by power for the event.

Procedure: The following steps and descriptions are required to safely connect, start, and disconnect the generator.

1. Connect wiring to transfer switch.
2. Start generator. a. Check voltage and rotation (rotation should be clockwise) b. Send notification that the generator will be load tested the following day
3. Bring generator online.
    a) Turn off all circuit breakers.
    b) Turn off main for normal power – remove key.
    c) Start generator and engage disconnect.
    d) Place key in circuit breaker for generator turn off.
    e) Turn circuit breaker back on.

f) Check voltage at switch gear.

4. Return to normal power.
   g) Turn off all circuit breakers.
   h) Turn off circuit breaker for generator – remove key.
   i) Turn off generator disconnect.
   j) Place key in normal power breaker and turn on.
   k) Turn all circuit breakers back on.
   l) Turn off generator. 5. Remove cables and store them.
   m) Fill generator with diesel fuel for next emergency.

g. Emergency Generator Fuel Records

Purpose and Scope: This procedure is for maintaining proper records for the fueling of emergency generators.

Procedure: When fueling of our emergency generators, it will be necessary for each generator being fueled to have the fuel metered for each drop. Have the driver of the fuel truck record on his drop invoice the location and metered amount of fuel for each generator. For example: Corn Center gallons = 650. Make sure that each invoice is signed and dated by the driver and the Plant Operations representative. The purpose of this procedure will allow Plant Operations to pinpoint the exact usage and cost by each machine.

h. General Procedures for complaints resolutions

Purpose and Scope: To provide after hour and weekend coverage for emergencies related to, but not limited to, building maintenance through a rotating basis among the department's employees.

Policy: The following guidelines are designed to provide staffing for on-call coverage.

On-call assignments will be on a rotational basis among Plant Operations employees whose normal workdays are Monday to Friday.

- An employee will not be on-call for more than fourteen (14) consecutive days; however, the employee may be on call for twenty-four (24) hours on each of those days. Calls during normal working hours will be processed through the WhatsApp/ mail System.
- The on-call week is from 5:00pm on Friday through 8:00am the following Friday. A cell phone and/or radio will be always carried.
- Only one person will be on call; however, that person can call another, if it is needed.
- Employee Responsibilities:

- On-call employees must enter each call on the on-call log and inform the Secretary for time keeping purposes.
- Employees may exchange scheduled on-call weeks with other employees; however, it must be approved by the Plant Operations Manager.
- On-call employees must be always accessible and must notify the manager and CAO if they are not available at that time.
- Employees called in may be expected to do whatever work is necessary even though it is not part of their regular duties, providing they have the necessary knowledge to perform the work safely and without risk to themselves, equipment, or operation. 5. On-call employees that need further guidance during their response to a call should not hesitate to call the manager and CAO for assistance. Remember: SAFETY FIRST.

Approved by: Col. Vipul Mathur, Head GS&A 9116613636.

SCS ENVIRO SERVICES PRIVATE LIMITED

7, KESAR VIHAR, OPPOSITE KHATU SHYAMJI TEMPLE,
RAMNAGARIYA ROAD, JAGATPURA,
JAIPUR-302017, RAJASTHAN (INDIA)
CIN NO.: U74140RJ2013PTC042216

TC-6960

MoEF&CC RECOGNIZED LABORATORY vide S.O. 5768(E) Dated 15.11.2018 Valid upto 14.11.2023
ISO-9001:2015 CERTIFIED LABORATORY
ISO-14001:2015 CERTIFIED LABORATORY
ISO-45001:2018 CERTIFIED LABORATORY

Sample ID No.: SCS/WW/20231025/15	**Date of Registration: 25.10.2023**
Report No. SCS/MUJ/WW/20231025/15(1/2)	**Date of Report: 31.10.2023**

TEST REPORT

Name of Client	:	M/s. Manipal University Jaipur,
Address of Client	:	VPO: Dehmi Kalan, Tehsil: Sanganer, Off Jaipur-Ajmer Expressway, Jaipur
Date of Sample Receipt	:	25.10.2023
Date of start of testing	:	26.10.2023
Date of end of testing	:	31.10.2023
Details of Sample	:	STP Inlet Water (350 KLD)
Sample sent by	:	University Representative

RESULTS

Parameter	Results	Norms as Per EP Act	Protocol
pH	7.81	-	APHA (23rd Edition) 4500 H
Total Suspended Solids	169 Mg/L	-	APHA (23rd Edition) 2540 D
COD	520 Mg/L	-	APHA (23rd Edition) 5220 B
$BOD_{3Days\ at\ 27°C}$	126 Mg/L	-	IS 3025 (Part 44)
Oil & Grease	45 Mg/L	-	APHA (23rd Edition) 5520 B
Total Kjeldhal's Nitrogen as NH_3	158 Mg/L	-	APHA (23rd Edition)4500 Norg B & C
Ammonical Nitrogen as N	61 Mg/L	-	APHA (23rd Edition)4500 NH3 B/C
Total Residual Chlorine	< 0.1 Mg/L	-	APHA (23rd Edition) 4500 Cl B
Phosphorus as P	2.5 Mg/L	-	APHA (23rd Edition) 4500 P- C

Per pro SCS Enviro Services Pvt. Ltd.,

SCS ENVIRO SERVICES PVT. LTD. JAIPUR

Dr. D. S. Parihar
(Technical Manager)
Authorised Signatory

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ISO-9001:2015 CERTIFIED LABORATORY
ISO-14001:2015 CERTIFIED LABORATORY
ISO-45001:2018 CERTIFIED LABORATORY

Sample ID No.: SCS/WW/20231025/15	**Date of Registration: 25.10.2023**
Report No. SCS/MUJ/WW/20231025/15(2/2)	**Date of Report: 31.10.2023**

TEST REPORT

Name of Client	:	M/s. Manipal University Jaipur,
Address Client	:	VPO: Dehmi Kalan, Tehsil: Sanganer, Off Jaipur-Ajmer Expressway, Jaipur
Date of Sampling	:	25.10.2023
Date of start of testing	:	26.10.2023
Date of end of testing	:	31.10.2023
Details of Sample	:	STP Inlet Water (350 KLD)
Sample collected by	:	University Representative

Parameters	Result	Protocol
Fecal Coliform	> 1600 MPN/100 ml	IS 15185

Per pro SCS Enviro Services Pvt. Ltd,

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ISO-45001:2018 CERTIFIED LABORATORY

Sample ID No.: SCS/WW/20231025/16	**Date of Registration: 25.10.2023**
Report No. SCS/MUJ/WW/20231025/16(1/2)	**Date of Report: 31.10.2023**

TEST REPORT

Name of Client : M/s. Manipal University Jaipur,
Address of Client : VPO: Dehmi Kalan, Tehsil: Sanganer, Off Jaipur-Ajmer Expressway, Jaipur
Date of Sample Receipt : 25.10.2023
Date of start of testing : 26.10.2023
Date of end of testing : 31.10.2023
Details of Sample : STP Outlet Water (350 KLD)
Sample sent by : University Representative

RESULTS

Parameter	Results	Norms as Per EP Act	Protocol
pH	7.12	5.5 to 9.0	APHA (23rd Edition) 4500 H
Total Suspended Solids	9 Mg/L	Not to exceed 100 Mg/L	APHA (23rd Edition) 2540 D
COD	53 Mg/L	Not to exceed 250 Mg/L	APHA (23rd Edition) 5220 B
$BOD_{3Days\ at\ 27^{o}C}$	10 Mg/L	Not to exceed 30 Mg/L	IS 3025 (Part 44)
Oil & Grease	< 5 Mg/L	Not to exceed 10 Mg/L	APHA (23rd Edition) 5520 B
Total Kjeldhal's Nitrogen as NH_3	6 Mg/L	Not to exceed 100 Mg/L	APHA (23rd Edition) 4500 Norg B & C
Ammonical Nitrogen as N	5.8 Mg/L	Not to exceed 50 Mg/L	APHA (23rd Edition) 4500 NH3 B/C
Total Residual Chlorine	< 0.1 Mg/L	Not to exceed 1 Mg/L	APHA (23rd Edition) 4500 Cl B
Phosphorus as P	0.6 Mg/L	Not to exceed 1 Mg/L	APHA (23rd Edition) 4500 P- C

Per pro SCS Enviro Services Pvt. Ltd.,

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ISO-45001:2018 CERTIFIED LABORATORY

Sample ID No.: SCS/WW/20231025/16	**Date of Registration: 25.10.2023**
Report No. SCS/MUJ/WW/20231025/16(2/2)	**Date of Report: 31.10.2023**

TEST REPORT

Name of Client	:	M/s. Manipal University Jaipur,
Address Client	:	VPO: Dehmi Kalan, Tehsil: Sanganer, Off Jaipur-Ajmer Expressway, Jaipur
Date of Sampling	:	25.10.2023
Date of start of testing	:	26.10.2023
Date of end of testing	:	31.10.2023
Details of Sample	:	STP Outlet Water (350 KLD)
Sample collected by	:	University Representative

Parameters	Result	Protocol
Fecal Coliform	Absent	IS 15185

Per pro SCS Enviro Services Pvt. Ltd,

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Sample ID No.: SCS/W/20231025/17	**Date of Registration: 25.10.2023**
Report No. SCS/MUJ/W/20231025/17(1/2)	**Date of Report: 31.10.2023**

TEST REPORT

Name of Client	:	M/s. Manipal University Jaipur,
Address Client	:	VPO: Dehmi Kalan, Tehsil: Sanganer, Off Jaipur-Ajmer Expressway, Jaipur
Date of Sampling	:	25.10.2023
Date of start of testing	:	26.10.2023
Date of end of testing	:	31.10.2023
Details of Sample	:	Borewell Water near 1-C
Sample collected by	:	SCS Representative

Parameter	Results	IS – 10500:2012		Protocol
		Requirement (Acceptable Limit)	Permissible Limit in absence of alternate source	
Table 1: Organoleptic and Physical Parameters				
pH	7.75	6.5 – 8.5	No Relaxation	APHA (23rd Edition) 4500 H
Color, Hazen Units	< 1	5	15	APHA (23rd Edition) 2120B
Odour	Agreeable	Agreeable	Agreeable	IS 3025 (Part 5)
Taste	Agreeable	Agreeable	Agreeable	IS 3025 (Part 7)
Turbidity, NTU	0.18	1	5	APHA (23rd Edition) 2130
Total Dissolved Solids	731.00 Mg / L	500 Mg / L	2,000 Mg / L	APHA (23rd Edition) 2540 C
Table 2: General Parameters Concerning Substances Undesirable in Excess Amounts				
Calcium as Ca	28.80 Mg / L	75 Mg / L	200 Mg / L	APHA (23rd Edition) 3500 Ca B
Chloride as Cl	151.95 Mg / L	250 Mg / L	1,000 Mg / L	APHA (23rd Edition) 4500 Cl^- B
Fluoride as F	1.00 Mg / L	1.0 Mg / L	1.5 Mg / L	APHA (23rd Edition) 4500 F D
Free Residual Chlorine	< 0.1 Mg / L	0.2 Mg / L	1.0 Mg / L	APHA (23rd Edition) 4500 Cl B
Iron as Fe	0.03 Mg / L	0.3 Mg / L	No Relaxation	APHA (23rd Edition) 3111B
Magnesium as Mg	14.58 Mg / L	30 Mg / L	100 Mg / L	APHA (23rd Edition) 3500 Mg B
Nitrate as NO_3	39.08 Mg / L	45 Mg / L	No relaxation	APHA (23rd Edition) 4500 NO_3^-B
Sulphate as SO_4	25.72 Mg / L	200 Mg / L	400 Mg / L	APHA (23rd Edition) 4500 E
Total Alkalinity as $CaCO_3$	296.00 Mg / L	200 Mg / L	600 Mg / L	APHA (23rd Edition) 2320
Total Hardness as $CaCO_3$	132.00 Mg / L	200 Mg / L	600 Mg / L	APHA (23rd Edition) 2340 C

Per pro SCS Enviro Services Pvt. Ltd.,

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CIN NO: U74140RJ2013PTC042216

ISO-9001:2015 CERTIFIED LABORATORY
ISO-14001:2015 CERTIFIED LABORATORY
ISO-45001:2018 CERTIFIED LABORATORY

Sample ID No.: SCS/W/20231025/17	**Date of Registration: 25.10.2023**
Report No. SCS/MUJ/W/20231025/17(2/2)	**Date of Report: 31.10.2023**

TEST REPORT

Name of Client	:	M/s. Manipal University Jaipur,
Address Client	:	VPO: Dehmi Kalan, Tehsil: Sanganer, Off Jaipur-Ajmer Expressway, Jaipur
Date of Sampling	:	25.10.2023
Date of start of testing	:	26.10.2023
Date of end of testing	:	31.10.2023
Details of Sample	:	Borewell Water near 1-C
Sample collected by	:	SCS Representative

Parameter	Results	IS – 10500:2012		Protocol
		Requirement (Acceptable Limit)	Permissible Limit in absence of alternate source	
E. Coli	Absent	Shall not be detectable in any 100 ml sample		IS 15185
Total Coliform	10 CFU	Shall not be detectable in any 100 ml sample		IS 15185
Fecal Coliform	Absent	Shall not be detectable in any 100 ml sample		IS 15185

Per pro SCS Enviro Services Pvt. Ltd.,

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ISO-9001:2015 CERTIFIED LABORATORY
ISO-14001:2015 CERTIFIED LABORATORY
ISO-45001:2018 CERTIFIED LABORATORY

Sample ID No.: SCS/W/20231025/18	**Date of Registration: 25.10.2023**
Report No. SCS/MUJ/W/20231025/18(1/2)	**Date of Report: 31.10.2023**

TEST REPORT

Name of Client : M/s. Manipal University Jaipur,
Address Client : VPO: Dehmi Kalan, Tehsil: Sanganer, Off Jaipur-Ajmer Expressway, Jaipur
Date of Sampling : 25.10.2023
Date of start of testing : 26.10.2023
Date of end of testing : 31.10.2023
Details of Sample : Borewell Water near Cricket Ground
Sample collected by : SCS Representative

Parameter	Results	IS – 10500:2012		Protocol
		Requirement (Acceptable Limit)	Permissible Limit in absence of alternate source	
Table 1: Organoleptic and Physical Parameters				
pH	7.86	6.5 – 8.5	No Relaxation	APHA (23rd Edition) 4500 H
Color, Hazen Units	< 1	5	15	APHA (23rd Edition) 2120B
Odour	Agreeable	Agreeable	Agreeable	IS 3025 (Part 5)
Taste	Agreeable	Agreeable	Agreeable	IS 3025 (Part 7)
Turbidity, NTU	0.15	1	5	APHA (23rd Edition) 2130
Total Dissolved Solids	687.00 Mg / L	500 Mg / L	2,000 Mg / L	APHA (23rd Edition) 2540 C
Table 2: General Parameters Concerning Substances Undesirable in Excess Amounts				
Calcium as Ca	32.00 Mg / L	75 Mg / L	200 Mg / L	APHA (23rd Edition) 3500 Ca B
Chloride as Cl	111.97 Mg / L	250 Mg / L	1,000 Mg / L	APHA (23rd Edition) 4500 Cl^- B
Fluoride as F	1.02 Mg / L	1.0 Mg / L	1.5 Mg / L	APHA (23rd Edition) 4500 F D
Free Residual Chlorine	< 0.1 Mg / L	0.2 Mg / L	1.0 Mg / L	APHA (23rd Edition) 4500 Cl B
Iron as Fe	0.03 Mg / L	0.3 Mg / L	No Relaxation	APHA (23rd Edition) 3111B
Magnesium as Mg	14.58 Mg / L	30 Mg / L	100 Mg / L	APHA (23rd Edition) 3500 Mg B
Nitrate as NO_3	50.24 Mg / L	45 Mg / L	No relaxation	APHA (23rd Edition) 4500 NO_3^-B
Sulphate as SO_4	21.80 Mg / L	200 Mg / L	400 Mg / L	APHA (23rd Edition) 4500 E
Total Alkalinity as $CaCO_3$	304.00 Mg / L	200 Mg / L	600 Mg / L	APHA (23rd Edition) 2320
Total Hardness as $CaCO_3$	140.00 Mg / L	200 Mg / L	600 Mg / L	APHA (23rd Edition) 2340 C

Per pro SCS Enviro Services Pvt. Ltd.,

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(Technical Manager)
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ISO-45001:2018 CERTIFIED LABORATORY

Sample ID No.: SCS/W/20231025/18	**Date of Registration: 25.10.2023**
Report No. SCS/MUJ/W/20231025/18(2/2)	**Date of Report: 31.10.2023**

TEST REPORT

Name of Client : M/s. Manipal University Jaipur,
Address Client : VPO: Dehmi Kalan, Tehsil: Sanganer, Off Jaipur-Ajmer Expressway, Jaipur
Date of Sampling : 25.10.2023
Date of start of testing : 26.10.2023
Date of end of testing : 31.10.2023
Details of Sample : Borewell Water near Cricket Ground
Sample collected by : SCS Representative

Parameter	Results	IS – 10500:2012		Protocol
		Requirement (Acceptable Limit)	Permissible Limit in absence of alternate source	
E. Coli	Absent	Shall not be detectable in any 100 ml sample		IS 15185
Total Coliform	7 CFU	Shall not be detectable in any 100 ml sample		IS 15185
Fecal Coliform	Absent	Shall not be detectable in any 100 ml sample		IS 15185

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SCS ENVIRO SERVICES PRIVATE LIMITED

7, KESAR VIHAR, OPPOSITE KHATU SHYAMJI TEMPLE,
RAMNAGARIYA ROAD, JAGATPURA,
JAIPUR-302017, RAJASTHAN (INDIA)
CIN NO.: U74140RJ2013PTC042216

TC-6960

MoEF&CC RECOGNIZED LABORATORY vide S.O. 5768(E) Dated 15.11.2018 Valid upto 14.11.2023
ISO-9001:2015 CERTIFIED LABORATORY
ISO-14001:2015 CERTIFIED LABORATORY
ISO-45001:2018 CERTIFIED LABORATORY

Sample ID No.: SCS/W/20231025/19	**Date of Registration: 25.10.2023**
Report No. SCS/MUJ/W/20231025/19(1/2)	**Date of Report: 31.10.2023**

TEST REPORT

Name of Client : M/s. Manipal University Jaipur,
Address Client : VPO: Dehmi Kalan, Tehsil: Sanganer, Off Jaipur-Ajmer Expressway, Jaipur
Date of Sampling : 25.10.2023
Date of start of testing : 26.10.2023
Date of end of testing : 31.10.2023
Details of Sample : 1-C Building Water Cooler
Sample collected by : SCS Representative

Parameter	Results	IS – 10500:2012		Protocol
		Requirement (Acceptable Limit)	Permissible Limit in absence of alternate source	
Table 1: Organoleptic and Physical Parameters				
pH	7.96	6.5 – 8.5	No Relaxation	APHA (23rd Edition) 4500 H
Color, Hazen Units	< 1	5	15	APHA (23rd Edition) 2120B
Odour	Agreeable	Agreeable	Agreeable	IS 3025 (Part 5)
Taste	Agreeable	Agreeable	Agreeable	IS 3025 (Part 7)
Turbidity, NTU	0.11	1	5	APHA (23rd Edition) 2130
Total Dissolved Solids	290.00 Mg / L	500 Mg / L	2,000 Mg / L	APHA (23rd Edition) 2540 C
Table 2: General Parameters Concerning Substances Undesirable in Excess Amounts				
Calcium as Ca	6.40 Mg / L	75 Mg / L	200 Mg / L	APHA (23rd Edition) 3500 Ca B
Chloride as Cl	79.98 Mg / L	250 Mg / L	1,000 Mg / L	APHA (23rd Edition) 4500 Cl^- B
Fluoride as F	0.52 Mg / L	1.0 Mg / L	1.5 Mg / L	APHA (23rd Edition) 4500 F D
Free Residual Chlorine	< 0.1 Mg / L	0.2 Mg / L	1.0 Mg / L	APHA (23rd Edition) 4500 Cl B
Iron as Fe	0.02 Mg / L	0.3 Mg / L	No Relaxation	APHA (23rd Edition) 3111B
Magnesium as Mg	2.92 Mg / L	30 Mg / L	100 Mg / L	APHA (23rd Edition) 3500 Mg B
Nitrate as NO_3	39.77 Mg / L	45 Mg / L	No relaxation	APHA (23rd Edition) 4500 NO_3^-B
Sulphate as SO_4	6.43 Mg / L	200 Mg / L	400 Mg / L	APHA (23rd Edition) 4500 E
Total Alkalinity as $CaCO_3$	68.00 Mg / L	200 Mg / L	600 Mg / L	APHA (23rd Edition) 2320
Total Hardness as $CaCO_3$	28.00 Mg / L	200 Mg / L	600 Mg / L	APHA (23rd Edition) 2340 C

Per pro SCS Enviro Services Pvt. Ltd.,

Dr. D. S. Parihar
(Technical Manager)
Authorised Signatory

SCS ENVIRO SERVICES PVT. LTD. JAIPUR

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CIN NO: U74140RJ2013PTC042216

ISO-9001:2015 CERTIFIED LABORATORY
ISO-14001:2015 CERTIFIED LABORATORY
ISO-45001:2018 CERTIFIED LABORATORY

Sample ID No.: SCS/W/20231025/19	**Date of Registration: 25.10.2023**
Report No. SCS/MUJ/W/20231025/19(2/2)	**Date of Report: 31.10.2023**

TEST REPORT

Name of Client : M/s. Manipal University Jaipur,
Address Client : VPO: Dehmi Kalan, Tehsil: Sanganer, Off Jaipur-Ajmer Expressway, Jaipur
Date of Sampling : 25.10.2023
Date of start of testing : 26.10.2023
Date of end of testing : 31.10.2023
Details of Sample : 1-C Building Water Cooler
Sample collected by : SCS Representative

Parameter	Results	IS – 10500:2012		Protocol
		Requirement (Acceptable Limit)	Permissible Limit in absence of alternate source	
E. Coli	Absent	Shall not be detectable in any 100 ml sample		IS 15185
Total Coliform	Absent	Shall not be detectable in any 100 ml sample		IS 15185
Fecal Coliform	Absent	Shall not be detectable in any 100 ml sample		IS 15185

Per pro SCS Enviro Services Pvt. Ltd.,

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ISO-9001:2015 CERTIFIED LABORATORY
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ISO-45001:2018 CERTIFIED LABORATORY

Sample ID No.: SCS/W/20231025/20	**Date of Registration: 25.10.2023**
Report No. SCS/MUJ/W/20231025/20(1/2)	**Date of Report: 31.10.2023**

TEST REPORT

Name of Client : M/s. Manipal University Jaipur,
Address Client : VPO: Dehmi Kalan, Tehsil: Sanganer, Off Jaipur-Ajmer Expressway, Jaipur
Date of Sampling : 25.10.2023
Date of start of testing : 26.10.2023
Date of end of testing : 31.10.2023
Details of Sample : 2 AB 001 Building Water Cooler
Sample collected by : SCS Representative

Parameter	Results	IS – 10500:2012		Protocol
		Requirement (Acceptable Limit)	Permissible Limit in absence of alternate source	
Table 1: Organoleptic and Physical Parameters				
pH	7.43	6.5 – 8.5	No Relaxation	APHA (23rd Edition) 4500 H
Color, Hazen Units	< 1	5	15	APHA (23rd Edition) 2120B
Odour	Agreeable	Agreeable	Agreeable	IS 3025 (Part 5)
Taste	Agreeable	Agreeable	Agreeable	IS 3025 (Part 7)
Turbidity, NTU	< 0.10	1	5	APHA (23rd Edition) 2130
Total Dissolved Solids	201.00 Mg / L	500 Mg / L	2,000 Mg / L	APHA (23rd Edition) 2540 C
Table 2: General Parameters Concerning Substances Undesirable in Excess Amounts				
Calcium as Ca	6.40 Mg / L	75 Mg / L	200 Mg / L	APHA (23rd Edition) 3500 Ca B
Chloride as Cl	47.98 Mg / L	250 Mg / L	1,000 Mg / L	APHA (23rd Edition) 4500 Cl^- B
Fluoride as F	0.27 Mg / L	1.0 Mg / L	1.5 Mg / L	APHA (23rd Edition) 4500 F D
Free Residual Chlorine	< 0.1 Mg / L	0.2 Mg / L	1.0 Mg / L	APHA (23rd Edition) 4500 Cl B
Iron as Fe	< 0.01 Mg / L	0.3 Mg / L	No Relaxation	APHA (23rd Edition) 3111B
Magnesium as Mg	3.89 Mg / L	30 Mg / L	100 Mg / L	APHA (23rd Edition) 3500 Mg B
Nitrate as NO_3	18.70 Mg / L	45 Mg / L	No relaxation	APHA (23rd Edition) 4500 NO_3 B
Sulphate as SO_4	< 5.00 Mg / L	200 Mg / L	400 Mg / L	APHA (23rd Edition) 4500 E
Total Alkalinity as $CaCO_3$	68.00 Mg / L	200 Mg / L	600 Mg / L	APHA (23rd Edition) 2320
Total Hardness as $CaCO_3$	32.00 Mg / L	200 Mg / L	600 Mg / L	APHA (23rd Edition) 2340 C

Per pro SCS Enviro Services Pvt. Ltd.,

SCS ENVIRO SERVICES PVT. LTD. JAIPUR

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JAIPUR-302017, RAJASTHAN (INDIA)
CIN NO: U74140RJ2013PTC042216

ISO-9001:2015 CERTIFIED LABORATORY
ISO-14001:2015 CERTIFIED LABORATORY
ISO-45001:2018 CERTIFIED LABORATORY

Sample ID No.: SCS/W/20231025/20	**Date of Registration: 25.10.2023**
Report No. SCS/MUJ/W/20231025/20(2/2)	**Date of Report: 31.10.2023**

TEST REPORT

Name of Client : M/s. Manipal University Jaipur,
Address Client : VPO: Dehmi Kalan, Tehsil: Sanganer, Off Jaipur-Ajmer Expressway, Jaipur
Date of Sampling : 25.10.2023
Date of start of testing : 26.10.2023
Date of end of testing : 31.10.2023
Details of Sample : 2 AB 001 Building Water Cooler
Sample collected by : SCS Representative

Parameter	Results	IS – 10500:2012		Protocol
		Requirement (Acceptable Limit)	Permissible Limit in absence of alternate source	
E. Coli	Absent	Shall not be detectable in any 100 ml sample		IS 15185
Total Coliform	Absent	Shall not be detectable in any 100 ml sample		IS 15185
Fecal Coliform	Absent	Shall not be detectable in any 100 ml sample		IS 15185

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TC-6960

MoEF&CC RECOGNIZED LABORATORY vide S.O. 5768(E) Dated 15.11.2018 Valid upto 14.11.2023
ISO-9001:2015 CERTIFIED LABORATORY
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ISO-45001:2018 CERTIFIED LABORATORY

Sample ID No.: SCS/W/20231025/21	**Date of Registration: 25.10.2023**
Report No. SCS/MUJ/W/20231025/21(1/2)	**Date of Report: 31.10.2023**

TEST REPORT

Name of Client : M/s. Manipal University Jaipur,
Address Client : VPO: Dehmi Kalan, Tehsil: Sanganer, Off Jaipur-Ajmer Expressway, Jaipur
Date of Sampling : 25.10.2023
Date of start of testing : 26.10.2023
Date of end of testing : 31.10.2023
Details of Sample : 1 AB 001 Building Water Cooler
Sample collected by : SCS Representative

Parameter	Results	IS – 10500:2012		Protocol
		Requirement (Acceptable Limit)	Permissible Limit in absence of alternate source	
Table 1: Organoleptic and Physical Parameters				
pH	7.73	6.5 – 8.5	No Relaxation	APHA (23rd Edition) 4500 H
Color, Hazen Units	< 1	5	15	APHA (23rd Edition) 2120B
Odour	Agreeable	Agreeable	Agreeable	IS 3025 (Part 5)
Taste	Agreeable	Agreeable	Agreeable	IS 3025 (Part 7)
Turbidity, NTU	< 0.10	1	5	APHA (23rd Edition) 2130
Total Dissolved Solids	147.00 Mg / L	500 Mg / L	2,000 Mg / L	APHA (23rd Edition) 2540 C
Table 2: General Parameters Concerning Substances Undesirable in Excess Amounts				
Calcium as Ca	6.40 Mg / L	75 Mg / L	200 Mg / L	APHA (23rd Edition) 3500 Ca B
Chloride as Cl	31.99 Mg / L	250 Mg / L	1,000 Mg / L	APHA (23rd Edition) 4500 Cl^- B
Fluoride as F	0.12 Mg / L	1.0 Mg / L	1.5 Mg / L	APHA (23rd Edition) 4500 F D
Free Residual Chlorine	< 0.1 Mg / L	0.2 Mg / L	1.0 Mg / L	APHA (23rd Edition) 4500 Cl B
Iron as Fe	< 0.01 Mg / L	0.3 Mg / L	No Relaxation	APHA (23rd Edition) 3111B
Magnesium as Mg	2.92 Mg / L	30 Mg / L	100 Mg / L	APHA (23rd Edition) 3500 Mg B
Nitrate as NO_3	23.56 Mg / L	45 Mg / L	No relaxation	APHA (23rd Edition) 4500 NO_3^-B
Sulphate as SO_4	< 5.00 Mg / L	200 Mg / L	400 Mg / L	APHA (23rd Edition) 4500 E
Total Alkalinity as $CaCO_3$	44.00 Mg / L	200 Mg / L	600 Mg / L	APHA (23rd Edition) 2320
Total Hardness as $CaCO_3$	28.00 Mg / L	200 Mg / L	600 Mg / L	APHA (23rd Edition) 2340 C

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CIN NO: U74140RJ2013PTC042216

ISO-9001:2015 CERTIFIED LABORATORY
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ISO-45001:2018 CERTIFIED LABORATORY

Sample ID No.: SCS/W/20231025/21	**Date of Registration: 25.10.2023**
Report No. SCS/MUJ/W/20231025/21(2/2)	**Date of Report: 31.10.2023**

TEST REPORT

Name of Client : M/s. Manipal University Jaipur,
Address Client : VPO: Dehmi Kalan, Tehsil: Sanganer, Off Jaipur-Ajmer Expressway, Jaipur
Date of Sampling : 25.10.2023
Date of start of testing : 26.10.2023
Date of end of testing : 31.10.2023
Details of Sample : 1 AB 001 Building Water Cooler
Sample collected by : SCS Representative

Parameter	Results	IS – 10500:2012		Protocol
		Requirement (Acceptable Limit)	Permissible Limit in absence of alternate source	
E. Coli	Absent	Shall not be detectable in any 100 ml sample		IS 15185
Total Coliform	Absent	Shall not be detectable in any 100 ml sample		IS 15185
Fecal Coliform	Absent	Shall not be detectable in any 100 ml sample		IS 15185

Per pro SCS Enviro Services Pvt. Ltd.,

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ISO-9001:2015 CERTIFIED LABORATORY
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ISO-45001:2018 CERTIFIED LABORATORY

Sample ID No.: SCS/W/20231025/22	**Date of Registration: 25.10.2023**
Report No. SCS/MUJ/W/20231025/22(1/2)	**Date of Report: 31.10.2023**

TEST REPORT

Name of Client : M/s. Manipal University Jaipur,
Address Client : VPO: Dehmi Kalan, Tehsil: Sanganer, Off Jaipur-Ajmer Expressway, Jaipur
Date of Sampling : 25.10.2023
Date of start of testing : 26.10.2023
Date of end of testing : 31.10.2023
Details of Sample : Food Court (MUJ) Water Cooler
Sample collected by : SCS Representative

Parameter	Results	IS – 10500:2012		Protocol
		Requirement (Acceptable Limit)	Permissible Limit in absence of alternate source	
Table 1: Organoleptic and Physical Parameters				
pH	7.86	6.5 – 8.5	No Relaxation	APHA (23rd Edition) 4500 H
Color, Hazen Units	< 1	5	15	APHA (23rd Edition) 2120B
Odour	Agreeable	Agreeable	Agreeable	IS 3025 (Part 5)
Taste	Agreeable	Agreeable	Agreeable	IS 3025 (Part 7)
Turbidity, NTU	< 0.10	1	5	APHA (23rd Edition) 2130
Total Dissolved Solids	171.00 Mg / L	500 Mg / L	2,000 Mg / L	APHA (23rd Edition) 2540 C
Table 2: General Parameters Concerning Substances Undesirable in Excess Amounts				
Calcium as Ca	9.60 Mg / L	75 Mg / L	200 Mg / L	APHA (23rd Edition) 3500 Ca B
Chloride as Cl	45.98 Mg / L	250 Mg / L	1,000 Mg / L	APHA (23rd Edition) 4500 Cl^- B
Fluoride as F	0.23 Mg / L	1.0 Mg / L	1.5 Mg / L	APHA (23rd Edition) 4500 F D
Free Residual Chlorine	< 0.1 Mg / L	0.2 Mg / L	1.0 Mg / L	APHA (23rd Edition) 4500 Cl B
Iron as Fe	< 0.01 Mg / L	0.3 Mg / L	No Relaxation	APHA (23rd Edition) 3111B
Magnesium as Mg	3.89 Mg / L	30 Mg / L	100 Mg / L	APHA (23rd Edition) 3500 Mg B
Nitrate as NO_3	16.95 Mg / L	45 Mg / L	No relaxation	APHA (23rd Edition) 4500 NO_3-B
Sulphate as SO_4	< 5.00 Mg / L	200 Mg / L	400 Mg / L	APHA (23rd Edition) 4500 E
Total Alkalinity as $CaCO_3$	52.00 Mg / L	200 Mg / L	600 Mg / L	APHA (23rd Edition) 2320
Total Hardness as $CaCO_3$	40.00 Mg / L	200 Mg / L	600 Mg / L	APHA (23rd Edition) 2340 C

Per pro SCS Enviro Services Pvt. Ltd.,

Dr. D. S. Parihar
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CIN NO: U74140RJ2013PTC042216

ISO-9001:2015 CERTIFIED LABORATORY
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ISO-45001:2018 CERTIFIED LABORATORY

Sample ID No.: SCS/W/20231025/22	**Date of Registration: 25.10.2023**
Report No. SCS/MUJ/W/20231025/22(2/2)	**Date of Report: 31.10.2023**

TEST REPORT

Name of Client : M/s. Manipal University Jaipur,
Address Client : VPO: Dehmi Kalan, Tehsil: Sanganer, Off Jaipur-Ajmer Expressway, Jaipur
Date of Sampling : 25.10.2023
Date of start of testing : 26.10.2023
Date of end of testing : 31.10.2023
Details of Sample : Food Court (MUJ) Water Cooler
Sample collected by : SCS Representative

Parameter	Results	IS – 10500:2012		Protocol
		Requirement (Acceptable Limit)	Permissible Limit in absence of alternate source	
E. Coli	Absent	Shall not be detectable in any 100 ml sample		IS 15185
Total Coliform	Absent	Shall not be detectable in any 100 ml sample		IS 15185
Fecal Coliform	Absent	Shall not be detectable in any 100 ml sample		IS 15185

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ISO-14001:2015 CERTIFIED LABORATORY
ISO-45001:2018 CERTIFIED LABORATORY

Sample ID No.: SCS/W/20231025/23	**Date of Registration: 25.10.2023**
Report No. SCS/MUJ/W/20231025/23(1/2)	**Date of Report: 31.10.2023**

TEST REPORT

Name of Client : M/s. Manipal University Jaipur,
Address Client : VPO: Dehmi Kalan, Tehsil: Sanganer, Off Jaipur-Ajmer Expressway, Jaipur
Date of Sampling : 25.10.2023
Date of start of testing : 26.10.2023
Date of end of testing : 31.10.2023
Details of Sample : Workshop Water Cooler
Sample collected by : SCS Representative

Parameter	Results	IS – 10500:2012		Protocol
		Requirement (Acceptable Limit)	Permissible Limit in absence of alternate source	
Table 1: Organoleptic and Physical Parameters				
pH	7.28	6.5 – 8.5	No Relaxation	APHA (23rd Edition) 4500 H
Color, Hazen Units	< 1	5	15	APHA (23rd Edition) 2120B
Odour	Agreeable	Agreeable	Agreeable	IS 3025 (Part 5)
Taste	Agreeable	Agreeable	Agreeable	IS 3025 (Part 7)
Turbidity, NTU	< 0.10	1	5	APHA (23rd Edition) 2130
Total Dissolved Solids	123.00 Mg / L	500 Mg / L	2,000 Mg / L	APHA (23rd Edition) 2540 C
Table 2: General Parameters Concerning Substances Undesirable in Excess Amounts				
Calcium as Ca	4.80 Mg / L	75 Mg / L	200 Mg / L	APHA (23rd Edition) 3500 Ca B
Chloride as Cl	27.99 Mg / L	250 Mg / L	1,000 Mg / L	APHA (23rd Edition) 4500 Cl^- B
Fluoride as F	0.15 Mg / L	1.0 Mg / L	1.5 Mg / L	APHA (23rd Edition) 4500 F D
Free Residual Chlorine	< 0.1 Mg / L	0.2 Mg / L	1.0 Mg / L	APHA (23rd Edition) 4500 Cl B
Iron as Fe	< 0.01 Mg / L	0.3 Mg / L	No Relaxation	APHA (23rd Edition) 3111B
Magnesium as Mg	< 2.00 Mg / L	30 Mg / L	100 Mg / L	APHA (23rd Edition) 3500 Mg B
Nitrate as NO_3	11.99 Mg / L	45 Mg / L	No relaxation	APHA (23rd Edition) 4500 NO_3^-B
Sulphate as SO_4	< 5.00 Mg / L	200 Mg / L	400 Mg / L	APHA (23rd Edition) 4500 E
Total Alkalinity as $CaCO_3$	40.00 Mg / L	200 Mg / L	600 Mg / L	APHA (23rd Edition) 2320
Total Hardness as $CaCO_3$	20.00 Mg / L	200 Mg / L	600 Mg / L	APHA (23rd Edition) 2340 C

Per pro SCS Enviro Services Pvt. Ltd.,

Dr. D. S. Parihar
(Technical Manager)
Authorised Signatory

SCS ENVIRO SERVICES PVT. LTD. JAIPUR

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SCS ENVIRO SERVICES PRIVATE LIMITED

7, KESAR VIHAR, OPPOSITE KHATU SHYAMJI TEMPLE,
RAMNAGARIYA ROAD, JAGATPURA,
JAIPUR-302017, RAJASTHAN (INDIA)
CIN NO: U74140RJ2013PTC042216

ISO-9001:2015 CERTIFIED LABORATORY
ISO-14001:2015 CERTIFIED LABORATORY
ISO-45001:2018 CERTIFIED LABORATORY

Sample ID No.: SCS/W/20231025/23	**Date of Registration: 25.10.2023**
Report No. SCS/MUJ/W/20231025/23(2/2)	**Date of Report: 31.10.2023**

TEST REPORT

Name of Client : M/s. Manipal University Jaipur,
Address Client : VPO: Dehmi Kalan, Tehsil: Sanganer, Off Jaipur-Ajmer Expressway, Jaipur
Date of Sampling : 25.10.2023
Date of start of testing : 26.10.2023
Date of end of testing : 31.10.2023
Details of Sample : Workshop Water Cooler
Sample collected by : SCS Representative

Parameter	Results	IS – 10500:2012		Protocol
		Requirement (Acceptable Limit)	Permissible Limit in absence of alternate source	
E. Coli	Absent	Shall not be detectable in any 100 ml sample		IS 15185
Total Coliform	Absent	Shall not be detectable in any 100 ml sample		IS 15185
Fecal Coliform	Absent	Shall not be detectable in any 100 ml sample		IS 15185

Per pro SCS Enviro Services Pvt. Ltd.,

Dr. D. S. Parihar
(Technical Manager)
Authorised Signatory

SCS ENVIRO SERVICES PVT. LTD. JAIPUR

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SCS ENVIRO SERVICES PRIVATE LIMITED

7, KESAR VIHAR, OPPOSITE KHATU SHYAMJI TEMPLE,
RAMNAGARIYA ROAD, JAGATPURA,
JAIPUR-302017, RAJASTHAN (INDIA)
CIN NO.: U74140RJ2013PTC042216

TC-6960

MoEF&CC RECOGNIZED LABORATORY vide S.O. 5768(E) Dated 15.11.2018 Valid upto 14.11.2023
ISO-9001:2015 CERTIFIED LABORATORY
ISO-14001:2015 CERTIFIED LABORATORY
ISO-45001:2018 CERTIFIED LABORATORY

Sample ID No.: SCS/W/20231025/24	**Date of Registration: 25.10.2023**
Report No. SCS/MUJ/W/20231025/24(1/2)	**Date of Report: 31.10.2023**

TEST REPORT

Name of Client : M/s. Manipal University Jaipur,
Address Client : VPO: Dehmi Kalan, Tehsil: Sanganer, Off Jaipur-Ajmer Expressway, Jaipur
Date of Sampling : 25.10.2023
Date of start of testing : 26.10.2023
Date of end of testing : 31.10.2023
Details of Sample : Facility House WTP Treated water
Sample collected by : SCS Representative

Parameter	Results	IS – 10500:2012		Protocol
		Requirement (Acceptable Limit)	Permissible Limit in absence of alternate source	
Table 1: Organoleptic and Physical Parameters				
pH	7.38	6.5 – 8.5	No Relaxation	APHA (23rd Edition) 4500 H
Color, Hazen Units	< 1	5	15	APHA (23rd Edition) 2120B
Odour	Agreeable	Agreeable	Agreeable	IS 3025 (Part 5)
Taste	Agreeable	Agreeable	Agreeable	IS 3025 (Part 7)
Turbidity, NTU	0.10	1	5	APHA (23rd Edition) 2130
Total Dissolved Solids	126.00 Mg / L	500 Mg / L	2,000 Mg / L	APHA (23rd Edition) 2540 C
Table 2: General Parameters Concerning Substances Undesirable in Excess Amounts				
Calcium as Ca	6.40 Mg / L	75 Mg / L	200 Mg / L	APHA (23rd Edition) 3500 Ca B
Chloride as Cl	27.99 Mg / L	250 Mg / L	1,000 Mg / L	APHA (23rd Edition) 4500 Cl^- B
Fluoride as F	0.15 Mg / L	1.0 Mg / L	1.5 Mg / L	APHA (23rd Edition) 4500 F D
Free Residual Chlorine	< 0.1 Mg / L	0.2 Mg / L	1.0 Mg / L	APHA (23rd Edition) 4500 Cl B
Iron as Fe	< 0.01 Mg / L	0.3 Mg / L	No Relaxation	APHA (23rd Edition) 3111B
Magnesium as Mg	2.92 Mg / L	30 Mg / L	100 Mg / L	APHA (23rd Edition) 3500 Mg B
Nitrate as NO_3	11.82 Mg / L	45 Mg / L	No relaxation	APHA (23rd Edition) 4500 NO_3^-B
Sulphate as SO_4	< 5.00 Mg / L	200 Mg / L	400 Mg / L	APHA (23rd Edition) 4500 E
Total Alkalinity as $CaCO_3$	44.00 Mg / L	200 Mg / L	600 Mg / L	APHA (23rd Edition) 2320
Total Hardness as $CaCO_3$	28.00 Mg / L	200 Mg / L	600 Mg / L	APHA (23rd Edition) 2340 C

Per pro SCS Enviro Services Pvt. Ltd.,

Dr. D. S. Parihar
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SCS **SCS ENVIRO SERVICES PRIVATE LIMITED**

7, KESAR VIHAR, OPPOSITE KHATU SHYAMJI TEMPLE,
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CIN NO: U74140RJ2013PTC042216

ISO-9001:2015 CERTIFIED LABORATORY
ISO-14001:2015 CERTIFIED LABORATORY
ISO-45001:2018 CERTIFIED LABORATORY

Sample ID No.: SCS/W/20231025/24	**Date of Registration: 25.10.2023**
Report No. SCS/MUJ/W/20231025/24 (2/2)	**Date of Report: 31.10.2023**

TEST REPORT

Name of Client : M/s. Manipal University Jaipur,
Address Client : VPO: Dehmi Kalan, Tehsil: Sanganer, Off Jaipur-Ajmer Expressway, Jaipur
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Date of start of testing : 26.10.2023
Date of end of testing : 31.10.2023
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Sample collected by : SCS Representative

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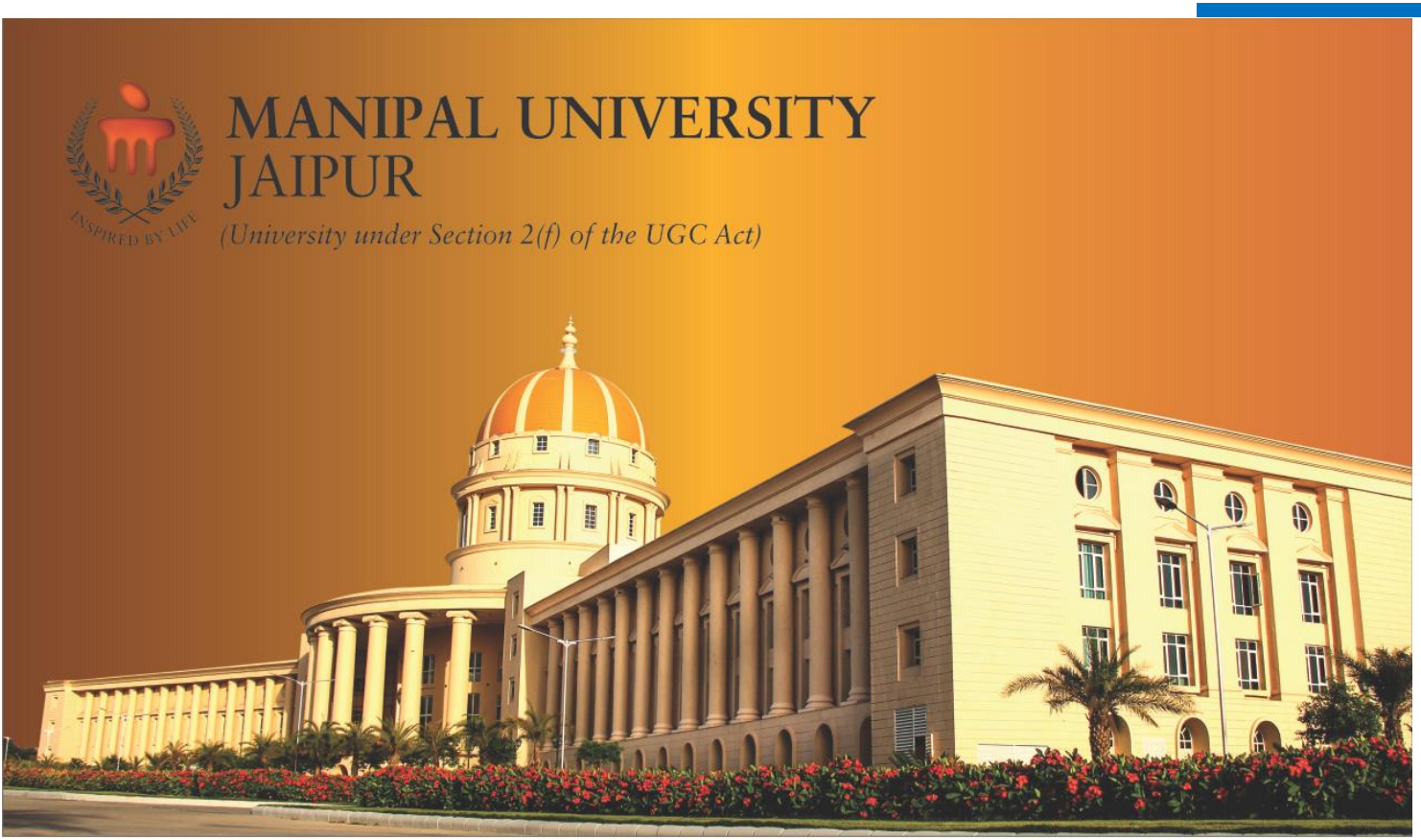
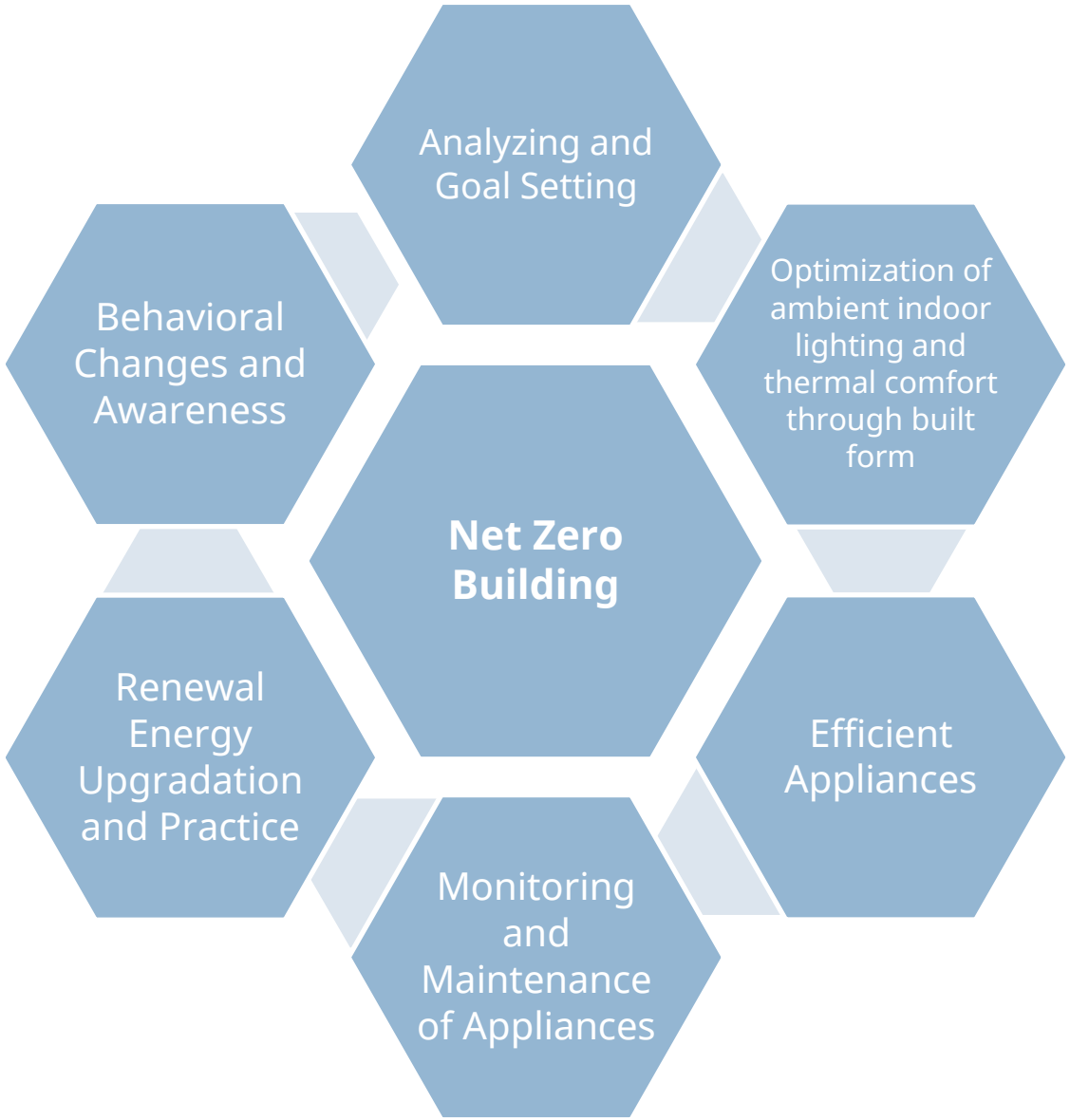
MANIPAL UNIVERSITY
JAIPUR
(University under Section 2(f) of the UGC Act)



Energy Efficient Practice and Consumption Plan

MANIPAL UNIVERSITY JAIPUR
(University under Section 2(f) of the UGC Act)

Energy Efficient Plan



PRACTISE AT MUJ

1. Conduct an Energy Audit.

2. Conscious built form

3. Application of efficient appliances

4. Regular maintenance of appliance.

5. Monthly monitoring of process and systems.

6. Annually analyze energy generation, consumption and future production

MANIPAL UNIVERSITY
JAIPUR
(University under Section 2(f) of the UGC Act)

RENEWABLE ENERGY UTLIZATION

Renewable energy Utilization is a key part of the design and development at Manipal University Jaipur. Hence, on site energy generation was given precedence to offset at least 50% of the total energy demand to achieve this solar p.v arrays are installed on the rooftops across all the major buildings in the University.

Key Performance Indicators:

The approach of MUJ to race towards self sufficiency in Energy is by reducing overall energy demand of MUJ (Admin & Academic-1) wherever possible. Design optimization was the key aspect which is driving MUJ to achieve energy use reduction. The reduced energy will be met by on site generated solar energy

- Climate responsive design of the building is the key element in the reduced energy demands.
- Appropriately sized systems with energy efficient technology & controls further reduced the energy demands
- Design has considered the orientation of building to construct the service structures on roof to reduce the amount of self shading & shadow patches on roof to maximum energy harvest with the solar pv's.
- Constant increase in capacity of solar PV system to steady offset of conventional energy demands

PRACTISE AT MUJ:

Available roof area is utilized for solar panels for high energy production to target NET Zero campus.

Parking shades are utilized for solar energy generation, efficiently utilizing space and getting benefitted for campus geographical location.

ENERGY AUDIT

PRACTISE AT MUJ:

INVENTUM POWER

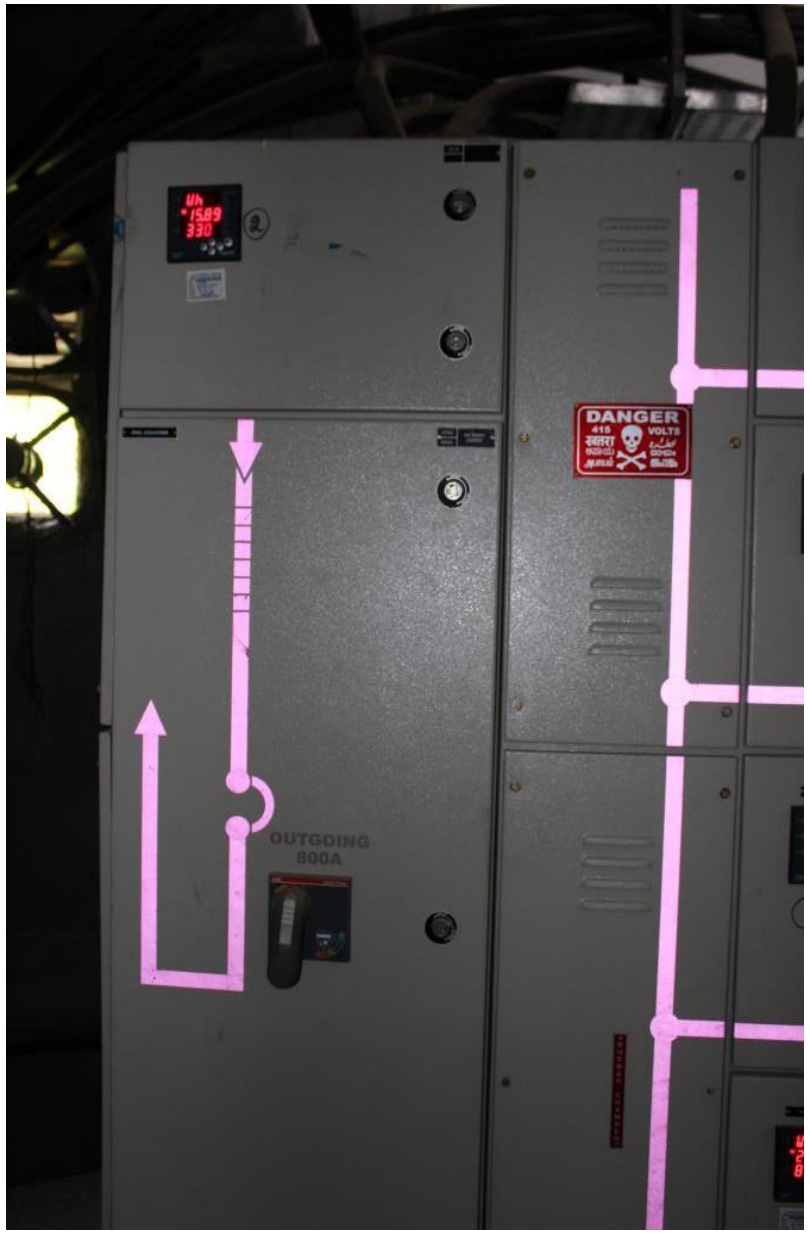
Document ID: IPPL/EA/ND/19-20/01

ENERGY SAVING SUMMARY

S.No	Energy Conservation Projects	Annual Water Saving (KL)	Annual Energy Saving (KVAh)	Annual Monetary Saving in Lakhs	Investment (in lakhs) Rs.	Payback Period in Months	Co2 Emission Reduction in Ton	Page No
1	Avoiding use of transformer-1 during non-peak months		21,818	2.05	1.5	9	17.9	54
2	Maintaining 410-415 V instead of 430 V at Transformer-1		1,40,695	13.23	Nil	Immediate	115.4	55
3	Energy saving achieved by Chiller set point optimisation		13,745	1.29	Nil	Immediate	11.3	57
4	Energy saving by chiller plant optimisation		43,636	4.10	Nil	Immediate	35.8	59
5	Installation of Automation in Unitary AC		7,987.2	0.75	1.2	19	6.5	63
6	Replacement of Old AC by Inverter AC		3,840	0.36	1.2	40	3.1	63
7	Increase Re-use of Grey-Waste Water from laundry	4000		9.76	15.0	18	-	68
8	Energy saving by using fine bubble diffuser		44,460.6	4.26	5.0	14.2	36.5	71
9	Aggregation and optimisation of compressed air usage in STP		3,625.3	0.34	0.5	17.8	3.0	74
10	Installation of Energy efficient fans		2,40,000	22.56	90.0	48	196.8	79
11	Replacement of Inefficient Heat Pumps (Either by new heat pump or through staform hot water system)		49,332.8	5.1	7.8	18.5	40.5	81
12	Cleaning and Maintenance of Heat pumps to improve COP		39,926.3	3.8	6.0	19.2	32.7	83
13	Installation of Solar street light at peripheral roads		24,741.8	2.3	9.5	48.8	20.3	85
Total		**4000**	**6,33,809**	**70**	**138**	**24**	**520**	

MANIPAL UNIVERSITY
JAIPUR
(University under Section 2(f) of the UGC Act)

RESOURCE CONSUMPTION MONITORING



PRACTISE AT MUJ

•Resource consumption monitoring is a critical process that enables organizations to track, analyze, and manage the use of key resources like water, energy, and materials. The goal is to reduce waste, optimize efficiency, and promote sustainable practices.

MANIPAL UNIVERSITY
JAIPUR
(University under Section 2(f) of the UGC Act)

RENEWABLE ENERGY ANALYSIS

Months	Grid - MUJ Academic		Solar (Only MUJ)		Grid + Solar (Only MUJ)		Cost Per Unit
	1	2	3	4	5 = (1 + 3)	6 = (2 + 4)	
	Total MUJ kWh	Grid Amount	Total kWh	Solar Amount	Total kWh	Total Amount	
Apr-22	3,97,078	39,47,857	2,02,188	11,44,512	5,99,266	50,92,369	8.50
May-22	3,79,562	36,95,533	1,99,357	11,36,036	5,78,919	48,31,569	8.35
Jun-22	3,84,395	37,69,540	1,71,227	9,87,165	5,55,622	47,56,705	8.56
Jul-22	3,98,368	38,78,313	1,51,776	8,50,543	5,50,144	47,28,856	8.60
Aug-22	2,59,937	26,35,241	1,14,253	6,63,070	3,74,190	32,98,311	8.81
Sep-22	4,43,900	42,67,386	91,560	3,76,623	5,35,460	46,44,009	8.67
Oct-22	2,45,303	24,65,876	1,32,260	8,21,264	3,77,563	32,87,140	8.71
Nov-22	1,69,602	17,29,170	52,145	2,13,794	2,21,747	19,42,964	8.8
Dec-22	2,20,490	23,52,140	49,463	2,02,798	2,69,953	25,54,938	9.5
Jan-23	1,80,914	18,42,970	35,830	1,46,904	2,16,744	19,89,874	9.2
Feb-23	133236	1374783	46321	189919	179557	1564702	8.71
Mar-23	135208	1402323	145107	8,58,610.00	280315	2260933	8.1
Total	30,79,549	3,05,84,026	13,45,166	74,01,319	42,79,608	3,71,26,735	8.85
Avg Per Month	3,42,172	33,98,225	1,49,463	8,22,369	4,75,512	41,25,193	

MANIPAL UNIVERSITY
JAIPUR
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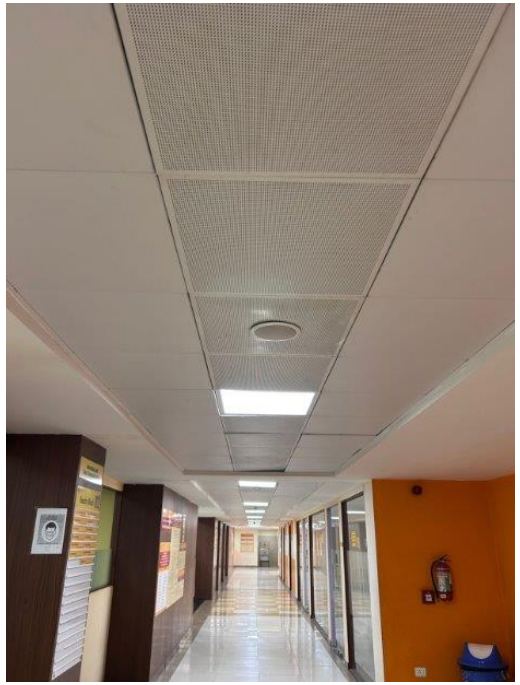
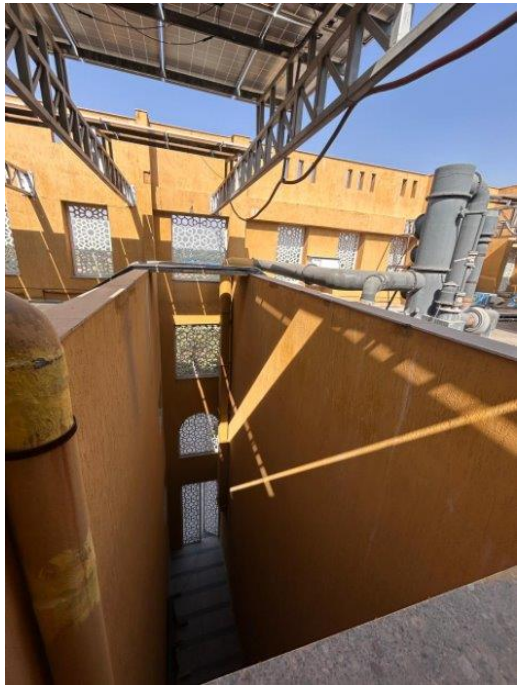
RENEWABLE ENERGY GENERATION

PRACTISE AT MUJ:





MANIPAL UNIVERSITY
JAIPUR
(University under Section 2(f) of the UGC Act)

RENEWABLE ENERGY SYSTEM MAINTENANCE

PRACTISE AT MUJ:

Head Office HBC

Rajasthan State Pollution Control Board

4, Institutional Area, Jhalana Doongari, Jaipur-302 004

Phone: 0141-2716840

Registered

File No : F(HDF)/JAIPUR(Sanganer)/6935(1)/2023-2024/5986-5988

Order No : 2023-2024/HBC/2809 **Dispatch Date: Dec 14 2023 1:06PM**

Unit Id : 27890

M/s Manipal University, Jaipur

Khasra No 467,469,474,458/1,473,475, 542, 544
Village Dehmi Kalan, Tehsil Sanganer, Ajmer Road ,
Dehmi Kalan Tehsil:Sanganer
District:JAIPUR

Sub: **Consent to Establish** under Section 25/26 of the Water (Prevention & Control of Pollution) Act, 1974 and under Section 21(4) of Air (Prevention & Control of Pollution) Act, 1981**.**

Ref: Your application(s) for Consent to Establish dated 16/06/2023 and subsequent correspondence.

Sir,

Consent to Establish under the provisions of Section 25/26 of the Water (Prevention & Control of Pollution) Act, 1974 (hereinafter to be referred as the Water Act) and under Section 21 of the Air (Prevention & Control of Pollution) Act, 1981, (hereinafter to be referred as the Air Act) as amended to date and rules & the orders issued thereunder ,**is hereby granted** for your **Manipal University Jaipur plant** situated / proposed at **Khasra No 467,469,474,458/1,473,475, 542, 544 village Dehmi Dehmi Kalan Tehsil:Sanganer District:JAIPUR** , Rajasthan under the provisions of the said Act(s). This consent is granted on the basis of examination of the information furnished by you in consent application(s) and the documents submitted therewith, subject to the following conditions:-

1 That this Consent to Establish is valid for a period from **16/06/2023** to **31/05/2028 or date of commencement of production / commissioning of the project or activities whichever is earlier .**

2 That this Consent is granted for manufacturing / producing following products / by products or carrying out the following activities or operation/processes or providing following services with capacities given below:

Particular	Type	Quantity / Capacity
Gross Built up Area	Product	21,525.00 SQ. METER

3 That in case of any increase in capacity or addition / modification / alteration or change in product mix or process or raw material or fuel, the project proponent is required to obtain fresh consent to establish.

Head Office HBC

Rajasthan State Pollution Control Board

4, Institutional Area, Jhalana Doongari, Jaipur-302 004

Phone: 0141-2716840

Registered

File No : **F(HDF)/JAIPUR(Sanganer)/6935(1)/2023-2024/5986-5988**

Order No : **2023-2024/HBC/2809** **Dispatch Date:** **Dec 14 2023 1:06PM**

Unit Id : 27890

4 That the control equipment as proposed by the applicant shall be installed before trial operation is started for which prior consent to operate under the provision of the **Water Act and Air Act** shall be obtained. This consent to establish shall not be treated as consent to operate.

5 That the quantity of effluent generation and disposal along with mode of disposal for the treated effluent shall be as under:

Type of effluent	Max. effluent generation (KLD)	Quantity of effluent to be recycled (KLD)	Quantity of treated effluent to be disposed (KLD) and mode of disposal
Domestic Sewage	24.000	16.000	5.000 Plantation and Horticulture within premises

6 That the sources of air emissions along with pollution control measures and the emission standards for the prescribed parameters shall be as under:

Head Office HBC

Rajasthan State Pollution Control Board

4, Institutional Area, Jhalana Doongari, Jaipur-302 004

Phone: 0141-2716840

Registered

File No : **F(HDF)/JAIPUR(Sanganer)/6935(1)/2023-2024/5986-5988**

Order No : **2023-2024/HBC/2809** **Dispatch Date:** **Dec 14 2023 1:06PM**

Unit Id : 27890

Sources of Air Emissions	Pollution Control Measures	Prescribed	
		Parameter	**Standard**
Dg set(1010KVA)	ACOUSTIC ENCLOSURE , ADEQUATE AIR POLLUTION CONTROL MEASURES , ADEQUATE STACK HEIGHT , ADEQUATE STACK HEIGHT OF 30 MTR.	NOx (as NO2) (at 15% O2) day basis in ppmv	710 mg/Nm3
		NMHC (as C) (at 15% O2)	100 mg/Nm3
		PM (at 15% O2)	75 mg/Nm3
		CO (at 15% O2)	150 mg/Nm3

7 That the Domestic Sewage shall be treated before disposal so as to conform to the standards prescribed by the Board as notified under the Environment (Protection) Act-1986 for disposal **Into Inland Surface Water**. The main parameters for regular monitoring shall be as under:

Head Office HBC

Rajasthan State Pollution Control Board

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Phone: 0141-2716840

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File No : F(HDF)/JAIPUR(Sanganer)/6935(1)/2023-2024/5986-5988

Order No : 2023-2024/HBC/2809 **Dispatch Date:** Dec 14 2023 1:06PM

Unit Id : 27890

Parameters	Standards
Oil and Grease	Not to exceed 10 mg/l
pH Value	Between 6.5 to 9.0
Biochemical Oxygen Demand (3 days at 27C)	Not to exceed 10 mg/l
Chemical Oxygen Demand	Not to exceed 50 mg/l
NH4 (N)	5 mg/l
N total	10 mg/l
Total Suspended Solids	Not to exceed 20 mg/l
Fecal Coliform (MPN per 100 ml)	Not to exceed 100

8 That the unit shall obtain all necessary permission from District Administration, Jaipur and Government of Rajasthan related to establishment of new academic block "Block-3" in "Manipal University", Khasra No 467, 469, 474, 458/1, 473, 475, 542, 544 Village Dehmi Kalan, Tehsil Sanganer, Ajmer Road, Tehsil: Sanganer District: JAIPUR, Rajasthan.

9 That this consent to establish is being issued for Academic Block-3 for Gross Built Up area: 21,525 Sq.m. For any change in area, the unit has to seek fresh consent to establish.

10 That if the project cost exceeds Rs. 104 Crore, the unit shall take/obtain modification in consent after paying fee as applicable.

11 That the unit shall provide adequate & safe infrastructure facility (step ladder) for monitoring at stack of D.G. set.

12 That the unit shall apply for CTO for Built up area @ 21,525 sq.m. within 15 days time period.

13 That the unit shall get amendment in all the previous CTOs for correct Built up area, where the same have been obtained for increased Built up area as compared to approved map.

Head Office HBC
Rajasthan State Pollution Control Board
4, Institutional Area, Jhalana Doongari, Jaipur-302 004
Phone: 0141-2716840

Registered

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Order No : 2023-2024/HBC/2809 **Dispatch Date:** Dec 14 2023 1:06PM

Unit Id : 27890

14 That unit shall comply standards as specified in Environment (Protection) Act,1986, (Limiting concentration in mg/l, except for pH):
i. pH: 6.5-9.0
ii. BOD 3days, 27 degree Celsius: 10
iii. COD: 50
iv. Oil & Grease : 10
v. TSS: 20
vi. N-total : 10
vii. Fecal Coliform : 100 MPN/100 ml
viii. NH4-N : 5

15 That the unit shall comply with the standards as prescribed vide MOEF notification no. GSR 826(E) dated 16th November, 2009 with respect to National Ambient Air Quality.

16 That the unit shall ensure compliance of ambient air quality standard in respect of noise as prescribed under Environment (Protection) Act & Rules made therein.

17 That unit shall provide adequate stack height along with acoustic enclosures on one D.G. set of 1010 KVA. Further unit shall not allow installing any air pollution source i.e. Boiler/Hot water generation etc. without prior consent to establish from the Board under the Air Act 1981.

18 That the total water consumption shall not exceed 30 KLD. The ground water shall not be abstracted without prior NOC from Central Ground Water Authority.

19 That the water flow meters shall be provided at all suitable points to measure quantity of daily water consumption, waste water generation, waste water treated and treated waste water recycled and utilized for plantation/gardening purposes. Daily record of the same shall be maintained and to be submitted to the Board.

20 That the unit shall ensure proper recycling and reuse of domestic waste water after adequate treatment.

21 That the entire domestic waste water generated in tune of 24 KLD shall be treated through existing sewage treatment plant having capacity of 500 KLD (150 KLD +350 KLD).

22 That the unit shall maintain condition of STP of capacity 500 KLD (150 KLD +350 KLD) to achieve the standards prescribed under EP Act 1986 and the unit shall dispose the sludge of STP in scientific manner.

23 That the unit shall provide disinfection system for STP treated water before its utilization in plantation/horticulture purpose.

24 That the unit shall dispose the sludge of STP in scientific manner.

25 That the unit shall not allow making any obstacles to any natural water flow i.e. natural nallah/stream carrying rain water to any water body.

Head Office HBC

Rajasthan State Pollution Control Board

4, Institutional Area, Jhalana Doongari, Jaipur-302 004

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File No : F(HDF)/JAIPUR(Sanganer)/6935(1)/2023-2024/5986-5988

Order No : 2023-2024/HBC/2809 **Dispatch Date:** Dec 14 2023 1:06PM

Unit Id : 27890

26 That the unit shall install adequately designed rain water harvesting structure for prevention and recharge of ground water in and around the area.

27 That energy conservation measures like installation of CFLs/FLs for lighting the areas outside the building should be integral part of the project design and should be in place before project commissioning.

28 That used CFL/FLs/LEDs should be properly collected and disposed off/sent for re-cycling as per prevailing rules/guidelines issued by regulatory authority. Use of solar panels also be done to the extent possible.

29 That the solid waste generated should be properly collected & segregated. Wet garbage should be composted and dry/inert solid waste should be disposed off at approved sites for land filling after recovering recyclable materials.

30 That the unit shall comply with the provisions of Hazardous and Other Wastes(Management and Transboundary Movement) Rules, 2016; Solid Waste Management Rules, 2016; Plastic Waste Management Rules 2016; Construction And Demolition Waste Management Rules 2016; Bio-Medical Waste Management Rules, 2016 and E- Waste Management Rules, 2016.

31 That the unit shall ensure proper recycling and reuse of domestic waste water after adequate treatment.

32 That waste water shall always be conveyed/ carried through closed conduit pipe line and no other measure of carrying waste water such as tankers, flexible or temporary pipe line shall be used/practiced.

33 That water meters shall be installed at suitable locations at closed conduit pipe line to measure the quantity of effluent reaching to 500 KLD (150 KLD +350 KLD) STP for treatment.

34 That the surplus/excess/unutilized treated water shall be used for agriculture/plantation.

35 That unit shall utilize entire treated waste water for flushing/process/gardening/non-potable uses and other gainful purpose and zero discharge status shall be maintained outside the premises. No waste water shall be discharged on land/ into sewer line/into natural nala/water body/drain

36 That the unit shall not allow making any obstacles to any natural water flow i.e. natural nallah/stream carrying rain water to any water body.

37 That this consent is being issued on the basis of information /documents submitted by the industry. In case, it is found during post inspection that, the unit has flouted the conditions of consent or provided inadequate control measures & wrong information, the consent may be revoked and action may be initiated under the Provisions of Water Act & Air Act without any further notice.

Registered

File No : F(HDF)/JAIPUR(Sanganer)/6935(1)/2023-2024/5986-5988
Order No : 2023-2024/HBC/2809 **Dispatch Date: Dec 14 2023 1:06PM**

Unit Id : 27890

38 **That the industry shall comply provisions 9(4) & 13(2) of Plastic Waste Management (PWM) Rules -2016 and as amended & shall submit application for registration in form-I to State Board.**

39 **That no Single use Plastic (SUP) items, which are banned vide Ministry of Environment, Forest and Climate Change (MoEF& CC), Government of India notification dated 12/08/2021 shall be used in the unit premises.**

40 **That this consent to establish shall be subject to compliance of any direction or order passed by Court of Law/NGT/CAQM in the matter.**

41 **That the unit shall obtain necessary permission from National Board for Wildlife Clearance (NBWL), if the project falls in ESZ of Notified protected Area and the activity is not covered under permitted activity. The consent is granted under the provisions of Water Act, 1974 and Air Act, 1981 and any other permission/consent w.r.t. Environment Protection Act, 1986 and Forest Conservation Act, 1980, if required, shall have to be obtained before implementation of the project.**

42 **That all the green building concepts/ norms shall be adopted in all possible ways which includes Green walls, solar energy etc., and compliance of this condition shall be submitted along with photograph during the time of CTO application.**

43 **That proper C&D mechanism shall be adopted, and compliance of this condition shall be submitted along with photograph during the time of CTO application.**

44 **That proper wash disposal system shall be developed, and compliance of this condition shall be submitted along with photograph during the time of CTO application.**

45 **That water harvesting system shall be developed for maximum storage and moisture improvement, and compliance of this condition shall be submitted along with photograph during the time of CTO application.**

46 **That proper ventilation measures for energy saving, less toxic materials for reducing indoor pollution and usage of certified wood shall be considered, and compliance of this condition shall be submitted along with photograph during the time of CTO application.**

47 **That proper waste segregation system to be developed.**

48 **That the unit shall take steps to enhance landscaping and green cover in all possible spaces and develop green belt in at least 33% of the total project area.**

49 That, notwithstanding anything provided hereinabove, the State Board shall have the power and reserves its right, as contained **under Section 27(2) of the Water Act and under Section 21(6) of the Air Act** to review anyone or all of the conditions imposed here in above and to make such variation as it deems fit for the purpose of compliance of the **Water Act and Air Act**.

Head Office HBC

Rajasthan State Pollution Control Board

4, Institutional Area, Jhalana Doongari, Jaipur-302 004

Phone: 0141-2716840

Registered

File No : F(HDF)/JAIPUR(Sanganer)/6935(1)/2023-2024/5986-5988

Order No : 2023-2024/HBC/2809 **Dispatch Date: Dec 14 2023 1:06PM**

Unit Id : 27890

50 That the grant of this **Consent to Establish** is issued from the environmental angle only, and does not absolve the project proponent from the other statutory obligations prescribed under any other law or any other instrument in force. The sole and complete responsibility, to comply with the conditions laid down in all other laws for the time-being in force, rests with the industry/ unit/ project proponent.

51 That the grant of this **Consent to Establish** shall not, in any way, adversely affect or jeopardize the legal proceedings, if any, instituted in the past or that could be instituted against you by the State Board for violation of the provisions of the Act or the Rules made thereunder.

This **Consent to Establish** shall also be subject, besides the aforesaid specific conditions, to the general conditions given in the enclosed Annexure. The project proponent will comply with the provisions of the **Water Act and Air Act** and to such other conditions as may, from time to time, be specified by the State Board under the provisions of the aforesaid Act(s). Please note that, non compliance of any of the above stated conditions would tantamount to revocation of **Consent to Establish** and project proponent / occupier shall be liable for legal action under the relevant provisions of the said Act(s).

This bears approval of the competent authority.

Yours sincerely,

Group Incharge[HBC]

(A): **Copy to:-**

1 Regional Officer, Regional Office, Rajasthan State Pollution Control Board, Jaipur (south) with request to ensure compliance of consent conditions.

2 Master File.

Group Incharge[HBC]

EC for Academic Block — Copy

State Level Environment Impact Assessment Authority. Rajasthan

4, Institutional Area, Jhalana Doongri, Jaipur-302004
Phone: 0141-2705633, 2711329 Ext. 361

No: F1(4)/SEIAA/SEAC-Raj/Secty/Project/Cat 8(a)B1 (194) /08-09 Jaipur, Dated: 29-12-09

To,

M/s Manipal Universal Learning P. Ltd.,
Manipal Towers,
14-HAL Airport Road,
Bangalore

Sub: EC for proposed Manipal Education Project village Dehmi Kalan, Teh. Sanganer, Jaipur by Mr. R.Shankar, V.P. (Project), Manipal Universal Learning P. Ltd., Manipal Towers, 14-HAL Airport Road, Bangalore.

Sir,

This has reference to your application No Nil dated 12-06-09 seeking environmental clearances for the above project under EIA Notification 2006. The proposal has been appraised as per prescribed procedure in the light of provisions under the EIA Notification 2006 on the basis of the mandatory documents enclosed with the application viz. the questionnaire, EIA EMP and additional clarifications furnished in response to the observation of the State Level Expert Committee Rajasthan, in its meetings held on 18/19.11.09.

2. **Brief details of the Project:**

1.	Category: -	"B"
2.	Item No (in the Schedule):	8(a)
3.	Purpose	Educational Project
4.	Location	Village-Dehmi Kalan, Tehsil-Sanganer, Distt.-Jaipur.
5.	Total Plot area	2, 69,801.80 M^2. (66.67 Acres / 26.98Ha)
6.	Built Up Area	2, 31,242.75 M^2.
7.	Utilized ground coverage:	14.48 %.
8.	FAR	Achieved FAR 68%
9.	Maximum Building Height	Not Provided
10.	No. of Floors	Not Provided.
11.	Total Parking Area	40,000 M^2 under surface parking. Parking provided for 670 Cars, 536 Two Wheelers, 135 Cycles.
12.	Expected Cost: -	Rs. 583 Crores - Development Cost; Rs. 36.1944 Crores - Land Cost
13.	Power Requirement	8 MVA during I-Phase through RSEB. Installation of 4 DG Sets proposed (2x2000 KVA, 2x1000 KVA; Diesel Consumption @ 5.4 ltr/hour).
14.	Water Requirement & Source	-923 KLD. Source: Tube Wells. A letter dt. 08.10.2009 has been sent by the P.P. to the Central Ground Water Authority for permission to install the required 6 nos. of tube wells.
15.	Environmental Management Plan	1) 62018.50 M^2 (approx. 23 %) is available under parks and green belt. 2) 40,000 Sq. M. is available for surface parking. 3) Rain Water Harvesting 4) A STP of 1075 KLD capacity.

3. The SEAC Rajasthan after due considerations of the relevant documents submitted by the project proponent and additional clarifications/documents furnished to it have recommended for Environmental Clearance with certain stipulations. The SEIAA Rajasthan after considering the proposal and recommendations of the SEAC Rajasthan hereby accord Environmental Clearance to the project as per the provisions of Environmental Impact Assessment Notification 2006 and its subsequent amendments, subject to strict compliance of the terms and conditions as follows:

M.S. Pollution Control Board

A

PART A: SPECIFIC CONDITIONS

I. CONSTRUCTION PHASE

i. "Consent to Establish" shall be obtained from Rajasthan State Pollution Control Board and a copy shall be submitted to the SEIAA, Rajasthan before start of any construction work at the site and submit the following documents to RPCB at the time of applying for CTE:
   - ✓ Identification of re-cycling plant with its process.

ii. For conservation of electricity and to reduce energy losses the management should ensure that the electrical voltage is stepped down from 33 KV to 11 KV and distributed at this level and finally brought to 440 volts.

iii. Provision shall be made for the housing of construction labor within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.

iv. All required sanitary and hygienic measures shall be in place before starting construction activities. The safe disposal of waste water and solid waste generated during the contraction phase should be ensured.

v. Adequate drinking water facilities shall be provided for construction workers at the site.

vi. Provisions should be made for the supply of fuel (kerosene or cooking gas); utensils such as pressure cookers etc. to the labourers.

vii. All the labourers engaged for construction should be screened for health and adequately treated before engaging them to work at the site.

viii. For disinfection of waste water, appropriate tertiary treatment may be given.

ix. All the topsoil excavated during the construction should be stored for use in horticulture/landscape development within the project site.

x. Disposal of muck during construction phase should not create any adverse effect on the neighboring communities and be disposed taking the necessary precautions for general safety and health aspects of the people, only in approved sites with the approval of competent authority

xi. Soil and ground water samples will be tested to ascertain that there is no threat to the ground water quality by leaching of heavy metals and other toxic contaminants.

xii. Construction spoils, including bituminous material and other hazardous materials must not be allowed to contaminate water courses and the dump sites for such material must be secured so that they do not leach into the ground water.

xiii. The diesel generator sets to be used during the construction phase should be low- sulphur-diesel type and should conform to Environment (Protection) Rules for air and noise emission standards.

xiv. Vehicles hired for bringing construction material and labourers to the site should be in good conditions and should conform to applicable air and noise emission standards and should be operated during non-peak/approved hours.

xv. Ambient noise levels should conform to residential standards both during day and night. Incremental pollution loads on the ambient air and noise quality should be closely monitored during construction phase.

xvi. Fly ash should be used as building material in the construction as per the provisions of Fly Ash notification of September,1999 and amended as on August, 2003 (The above condition is applicable only if the project is within 100 km of Thermal Power Station).

xvii. Ready mixed concrete must be used in building construction.

xviii. Storm water control and its re-use as per CGWA and BIS standards for various applications.

xix. Water demand during construction should be reduced by the use of pre-mixed concrete, curing agents and other best practices.

xx. Permission to draw ground water shall be obtained from the CGWA/CGWB prior to construction/operation of the project.

xxi. Separation of grey and black water should be done by the use of dual plumping line for separation of grey and black water.

xxii. Treatment of 100% grey water by decentralized treatment should be done.

xxiii. Fixtures for showers, toilet flushing and drinking should be of low flow either by use of aerators of pressure reducing devices or sensor based control.

xxiv. Use of glass may be reduced by up to 40% to reduce the electricity consumption and load in air-conditioning. If necessary, use high quality double glass with special reflective coating windows.

xxv. Roof should meet prescriptive requirement as per Energy Conservation Building Code by using appropriate thermal insulation material to fulfill requirement.

(18) (28)

xxv. Adequate measures shall be taken to reduce air and noise pollution during construction keeping in mind CPCB norms on noise limits.

xxvi. Opaque walls should meet prescriptive requirement as per Energy Conservation Building Code for all air-conditioned spaces, whereas, for non- air-conditioned spaces, by use of appropriate thermal insulation material to fulfill the requirement.

xxvii. A First Aid Room will be provided in the project both during construction and operation of the project.

xxix. Any hazardous waste generated during construction phase should be disposed off as per applicable rules and norms with necessary authorization of the Rajasthan Pollution Control Board.

xxx. The approval of the competent authority shall be obtained for structural safety of the building due to earthquake, adequacy of fire fighting equipments, etc as per National Building Code 2005 including protection measures from lightening etc.

xxxi. Regular supervision of the above and other measures for monitoring should be in place throughout the construction phase, so as to avoid nuisance to the surroundings.

xxxii. Approved plan from competent Authority and position with reference to Master Plan.

xxxiii. Copy of guidelines issued by concerned ministry for water scarce area is provided.

xxxiv. Ground water table to be shown along with source. Besides, permission of competent authority is obtained for withdrawal of ground water.

xxxv. Recalculate MSW quantity and revise disposal proposal.

xxxvi. Composting of biodegradable waste shall be carried out with in the campus.

xxxvii. Provision of solar water heating /chilling etc shall be explored.

xxxviii. Review and revise the requirement of DG set capacities for 100% power back up through to optimization of power back up in case of power failure and emergency.

(B)

II OPERATION PHASE

i. An independent expert shall certify the installation of the Sewage Treatment Plant (STP) and a report in this regard shall be submitted to the RPCB, before the project is commissioned for operation. Discharge of treated sewage shall conform to the norms & standards of the Rajasthan State Pollution Control Board.

ii. For conservation of electricity and to reduce energy losses the management should ensure that the electrical voltage is stepped down from 33 KV to 11 KV and distributed at this level and finally brought to 440 volts.

iii. Rain Water harvesting (RWH) for roof run-off and surface run-off, as plan submitted shall be implemented. Before recharging the surface run off, pre-treatment must be done to remove suspended matter, oil and grease. The RWH plan should as per GOI manual

iv. The solid waste generated should be properly collected & segregated before disposal to the City Municipal Facility. The in-vessel bio-conversion technique may be used for composting the organic waste.

v. Any hazardous waste including biomedical waste should be disposed of as per applicable Rules & norms with necessary approvals of the Rajasthan State Pollution Control Board.

vi. The green belt design along the periphery of the plot shall achieve attenuation factor conforming to the day and night noise standards prescribed for residential land use. The open space inside the plot should be suitably landscaped and covered with vegetation of indigenous variety.

vii. The D. G. sets to be operated with stack height as per RPCB norms.

viii. Incremental pollution loads on the ambient air quality noise and water quality shall be periodically monitored after commissioning of the project.

ix. Application of solar energy should be incorporated to illumination of common areas, lighting for gardens and street lighting in addition to provision for solar water heating. A hybrid system or fully solar system for a portion of the apartments should be provided.

x. Traffic congestion near the entry and exit points from the roads adjoining the proposed project site must be avoided. Parking should be fully internalized and no public space should be utilized.

xi. A Report on the energy conservation measures confirming to energy conservation norms finalize by Bureau of Energy Efficiency should be prepared incorporating details about building materials & technology, R & U Factors etc. Quantify energy saving measures.

xii. Proper system of channelizing excess storm water shall be provided.

xiii. The power factor should be maintained near unity.

xiv. Trees and shrubs of local species should be planted to allow habitat for birds with appropriate distance from the boundary.

xv. No puzzle parking shall be allowed.

xvi. Re-cycled water to match standards for cooling water system.

xvii. Adequate measures should be taken to prevent odor from solid waste processing and STP.

PART – B. GENERAL CONDITIONS:

1. The environmental safeguards contained in Form 1-A should be implemented in letter and spirit.
2. Six monthly monitoring reports should be submitted to Rajasthan and Rajasthan State Pollution Control Board.
3. Officials of the RPCB, who would be monitoring the implementation of environmental safeguards, should be given full cooperation facilities and documents/data by the PP during their inspection. A complete set of all the documents submitted to SEIAA, Rajasthan should be forwarded to the DoE, Rajasthan and Rajasthan State Pollution Control Board.
4. In case of any change(s) in the scope of the project, the PP requires a fresh appraisal by SEIAA/SEAC, Rajasthan.
5. The SEIAA/SEAC, Rajasthan reserves the right to add additional safeguard measures subsequently, if found necessary, and to take action including revoking of the environmental clearance under the provisions of the Environment (Protection) Act-1986, to ensure effective implementation of the suggested safeguard measures in a time bound and satisfactory manner.
6. All the other statutory clearances such as the approvals for storage of diesel from the Chief Controller of Explosives, Fire department, Civil Aviation Department, Forest Conservation Act, 1980 and Wildlife (protection) Act,1972 etc. shall be obtained, as may be applicable, by PP from the competent authority.
7. The PP should ensure advertising in at least two local news papers widely circulated in the region, one of which shall be in vernacular language that, the project has been accorded environmental clearance and copies of the clearance letters are available with SEIAA, Rajasthan and the Rajasthan State Pollution Control Board and may also be seen on the website of the Board at www.rpcb.nic.in. The advertisement should be made within 7(seven) days from the date of issue of the environmental clearance and a copy should also be forwarded to the SEIAA, Rajasthan and Regional Office, Jaipur(S) of the Board.
8. These stipulations would also be enforced amongst the others under the provisions of Water (Prevention and Control of Pollution) Act, 1974, the Air (Prevention and Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, the Public Liability (Insurance) Act, 1991 and EIA Notification, 2006.
9. Environment clearance is subject to final order of the Hon'ble Supreme Court of India in the matter of Goa Foundation Vs. Union of India in Writ Petition(Civil) No. 460 of the year 2004 as may be applicable to this project.

Yours faithfully,

Sd/-

(Sankatha Prasad)
Member Secretary
SEIAA Rajasthan

Copy to following for information and necessary action:

1. Secretary, Ministry of Environment and Forest, Govt. of India, Paryavaran Bhavan, CGO Complex, Lodhi Road, New Delhi.
2. Principal Secretary, Environment Department, Rajasthan, Jaipur.
3. Shri S.C. Derashri, Chairman, SEIAA Rajasthan, 90, Geejgarh Vihar, Hawa Sarak, Jaipur.
4. Shri R.S. Bhandari, Member, SEIAA Rajasthan, 2- Museum Road, Ram Niwas Bagh, Jaipur.
5. Member Secretary, Rajasthan State Pollution Control Board, Jaipur.
6. Member Secretary, SEAC Rajasthan.
7. The CCF, Regional Office, Ministry of Environment & Forests, RO(CZ), Kendriya Bhawan, 5th Floor, Sector 'H', Aliganj, Lucknow-226 020.
8. IA- Division, Monitoring Cell, MoEF, Paryavaran Bhavan, CGO Complex, Lodhi Road, New Delhi-110003.

M.S. SEIAA (Rajasthan)

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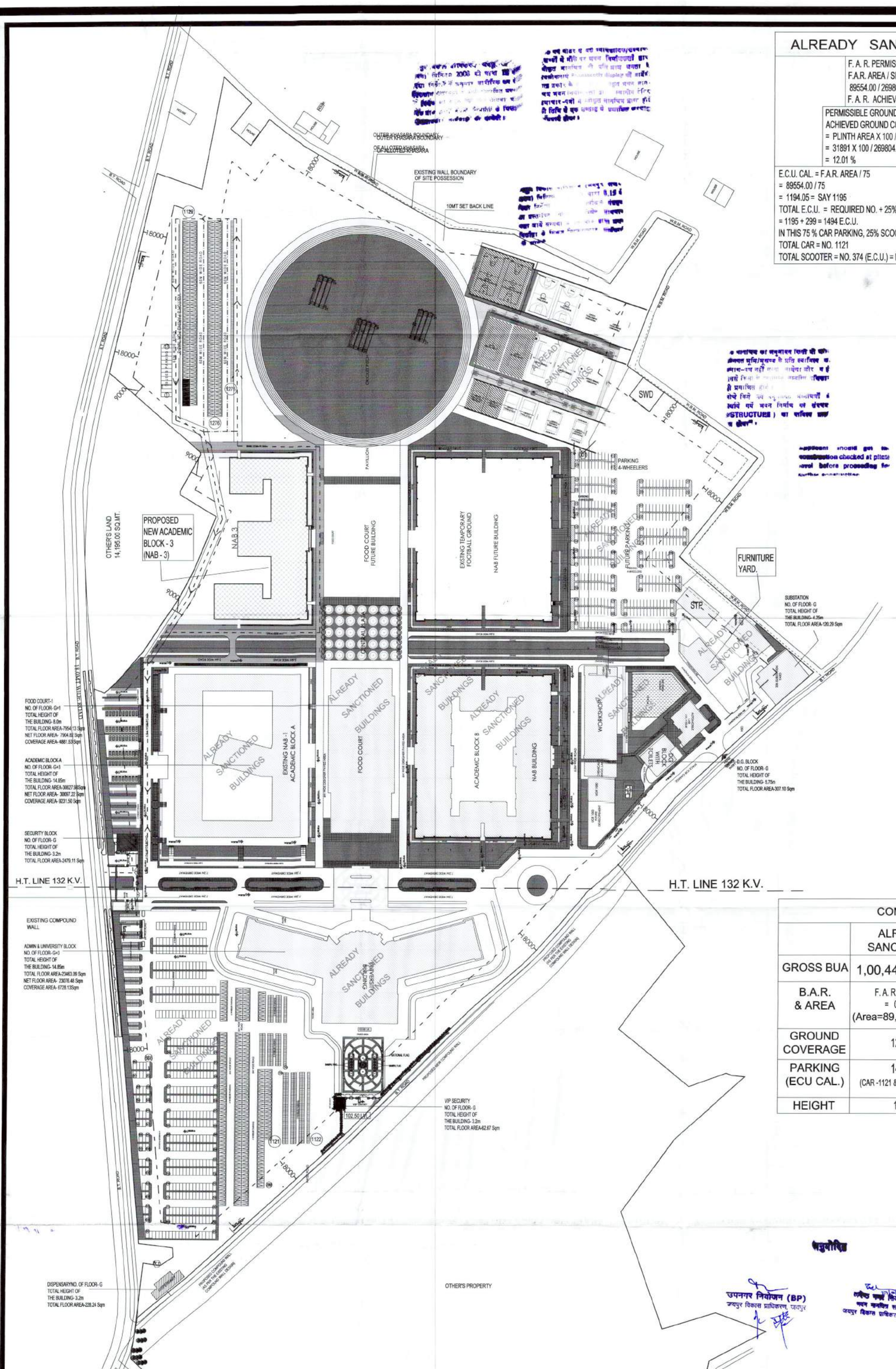
mplience report of the EC
(B8) Red Category
RPCB.NIC.IN; Small letter
4
Consent to Establish - Water - Air
Air



ALREADY SANCTIONED BUILDINGS (AREA STATEMENT)

F. A. R. PERMISSIBLE = 1
F.A.R. AREA / SITE AREA = 89554.00 / 269804.00
F. A. R. ACHIEVED = 0.331<1

PERMISSIBLE GROUND COVERAGE = 35%
ACHIEVED GROUND COVERAGE
= PLINTH AREA X 100 / SITE AREA
= 31891 X 100 / 269804.00
= 12.01 %

E.C.U. CAL. = F.A.R. AREA / 75
= 89554.00 / 75
= 1194.05 = SAY 1195
TOTAL E.C.U. = REQUIRED NO. + 25% VISITOR PARKING
= 1195 + 299 = 1494 E.C.U.
IN THIS 75 % CAR PARKING, 25% SCOOTER PARKING.
TOTAL CAR = NO. 1121
TOTAL SCOOTER = NO. 374 (E.C.U.) = NO. 1122

TOTAL PLOT AREA - 2,69,804.00 SQM(66.67 ACRES)

SL NO	PARTICULARS	GROSS BUILT UP AREA (SQ.MT.)	F.A.R. AREA (SQ.MT.)
1	UNIVERSITY ADMIN & LIBRARY BUILDING	23463	23076
2	ACADEMIC BLOCK-A	30628	30097
3	FOOD COURT	7954	7905
4	SECURITY	230	230
5	WORKSHOP (GROUND FLOOR)	1388	1388
6	SUBSTATION	120	120
7	D.G.BLOCK	307	307
8	DISPENSARY	228	228
9	VIP SECURITY BLOCK	62	62
	TOTAL	64380	63413
10	NEW ACADEMIC BLOCK	31952	22865
11	AUTOMOBILE SHED	1050	830
12	FIRST FLOOR WORK SHOP BUILDING.	1542	1225
13	CHEMICAL ENGINEERING LAB - 3	369	291
14	CHEMICAL ENGINEERING RESEARCH LAB.	100	100
	TOTAL	99,393	88,724
15	FURNITURE YARD	1050	830
	ALREADY APPROVED AREA (TOTAL)	1,00,443	89,554

EXTENSION (NEW SUBMISSIONS)

	PARTICULARS	GROSS BUILT UP AREA (SQ.MT.)	B.A.R. AREA (SQ.MT.)
1	NEW ACADEMIC BLOCK - 3	21,525.00	21,525.00

B.A.R. IN TOTALITY

ALREADY APPROVED (ACHIEVED) FAR = 0.331
CONVERTED INTO B.A.R. (BUILT AREA RATIO)
- F A R X 1.5 = 0.331 X 1.5 = 0.4965

PERMISSIBLE B A R
(AS PER 2020 BUILDING BYLAWS)= 2.00

B A R OF THE PROPOSED
NEW ACADEMIC BLOCK - 3 (NAB-3)
= B.A.R. AREA / SITE AREA
= 21525.00 / 269804.00
= 0.079
TOTAL BAR OF THE PLOT
= 0.4965 + 0.079 = 0.5755 < 2

COMPRESHENSIVE TABLE

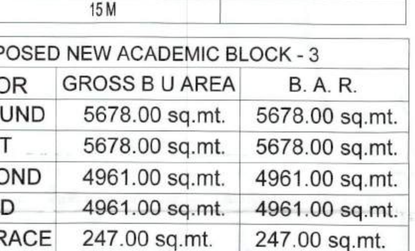
	ALREADY SANCTIONED	NEW PROPOSAL	TOTAL
GROSS BUA	1,00,443 Sq.mt.	21,525.00 sq.mt.	1,21,968 Sq.mt.
B.A.R. & AREA	F.A.R. ACHIEVED = 0.331<1 (Area=89,554 Sq.mt.)	(CONVERTED BAR) +(NAB-3) 0.4965 + 0.079 (21,525 sq.mt.)	= 0.5755 < 2 (1,11,079 sq.mt.)
GROUND COVERAGE	12.01 %	1.91 %	13.92 %
PARKING (ECU CAL.)	1494 (CAR -1121 & SCOOTER-1122)	206 (BUSES - 13, CAR -116 & SCOOTER-153)	1700 (BUSES - 13, CAR -1237 & SCOOTER-1275)
HEIGHT	15 M	15 M	

PROPOSED NEW ACADEMIC BLOCK - 3		
FLOOR	GROSS B U AREA	B. A. R.
GROUND	5678.00 sq.mt.	5678.00 sq.mt.
FIRST	5678.00 sq.mt.	5678.00 sq.mt.
SECOND	4961.00 sq.mt.	4961.00 sq.mt.
THIRD	4961.00 sq.mt.	4961.00 sq.mt.
TERRACE	247.00 sq.mt.	247.00 sq.mt.
TOTAL	21,525.00 sq.mt.	21,525.00 sq.mt.

REQUIRED E.C.U. CALCULATIONS
= B.A.R. / 115
= 21525.00 / 115
= 187.17
TOTAL E.C.U. = REQUIRED NO. + 10% VISITOR PARKING
= 187.17 + 18.70 = 205.87 = 206 E.C.U.
IN THIS 75 % BUSES & CARS, 25% SCOOTER PARKING.
TOTAL BUSES = (39 E.C.U. / 3) = NO. 13
TOTAL CARS = NO. 116
TOTAL SCOOTERS = (51 E.C.U. X 3) = NO. 153

OVERALL TOTAL BUSES = 13
OVERALL TOTAL CARS = 1121 + 116 = 1237
OVERALL TOTAL SCOOTERS = 1122 + 153 = 1275

PERMISSIBLE GROUND COVERAGE = 40%
ACHIEVED GROUND COVERAGE
= PLINTH AREA X 100 / SITE AREA
= 37569 X 100 / 2,69,804.00
= 13.92 %



ALREADY SANCTIONED BUILDINGS.

PROPOSED BUILDINGS

DRG NO.
NAB-3-(01 & 02)

NOTES

THIS DEVELOPMENT HAVE BEEN CONCEIVED,DESIGNED AND DRAFTED ON THE BASIS OF THE FOLLOWING PARAMETERS:

1. ANY DISCREPANCY IN THE DRAWING IS TO BE BROUGHT TO THE NOTICE OF THE ARCHITECT IMMEDIATELY.
2. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
3. ALL DIMENSIONS ARE FROM UNFINISHED TO UNFINISHED SURFACES UNLESS OTHERWISE SPECIFIED.
4. DRAWING NOT TO BE SCALED. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
5. DRAWING MUST BE READ IN CONJUNCTION WITH STRUCTURAL DRAWINGS.
6. THE SIZES OF ALL THE STRUCTURAL MEMBERS TO BE REFEREED FROM DRAWINGS OF STRUCTURAL CONSULTANT.
7. ALL CENTER LINE DIMENSIONS ARE WITH REFERENCE TO (0,0).

REVISIONS	DATE	DESCRIPTION	BY
0			
1	01-05-2013	ADDITION OF LIFT LOBBY AND STAIRCASE PRESSURIZATION SHAFT	DUE TO C.F.O. N.O.C.
2			
3			
4			
5			
6			
7			
8			
9			
10			

PROJECT MANAGEMENT CONSULTANT

DILLIGENT PMC

STRUCTURAL CONSULTANT

TRC Engineering (I) Pvt. Ltd.,

SERVICES CONSULTANT

MEP CONSULTING ENGINEERS

PROJECT:
PROPOSED ACADEMIC BLOCK,
MANIPAL UNIVERSITY JAIPUR
KHASRA. 467,469,474,468/1,473,475,542,544
GRAM: DEHMI KALAN
TEHSIL: SANGANEER
JAIPUR, RAJASTHAN

DRG.TITLE:
MASTER PLAN

REVISION	JOB NO.: 4401	DRG NO.:	NORTH:
	SCALE: A1: 1:100	DATE:	
FILE:	DEALT BY:	CHECKED BY:	APPROVED BY:

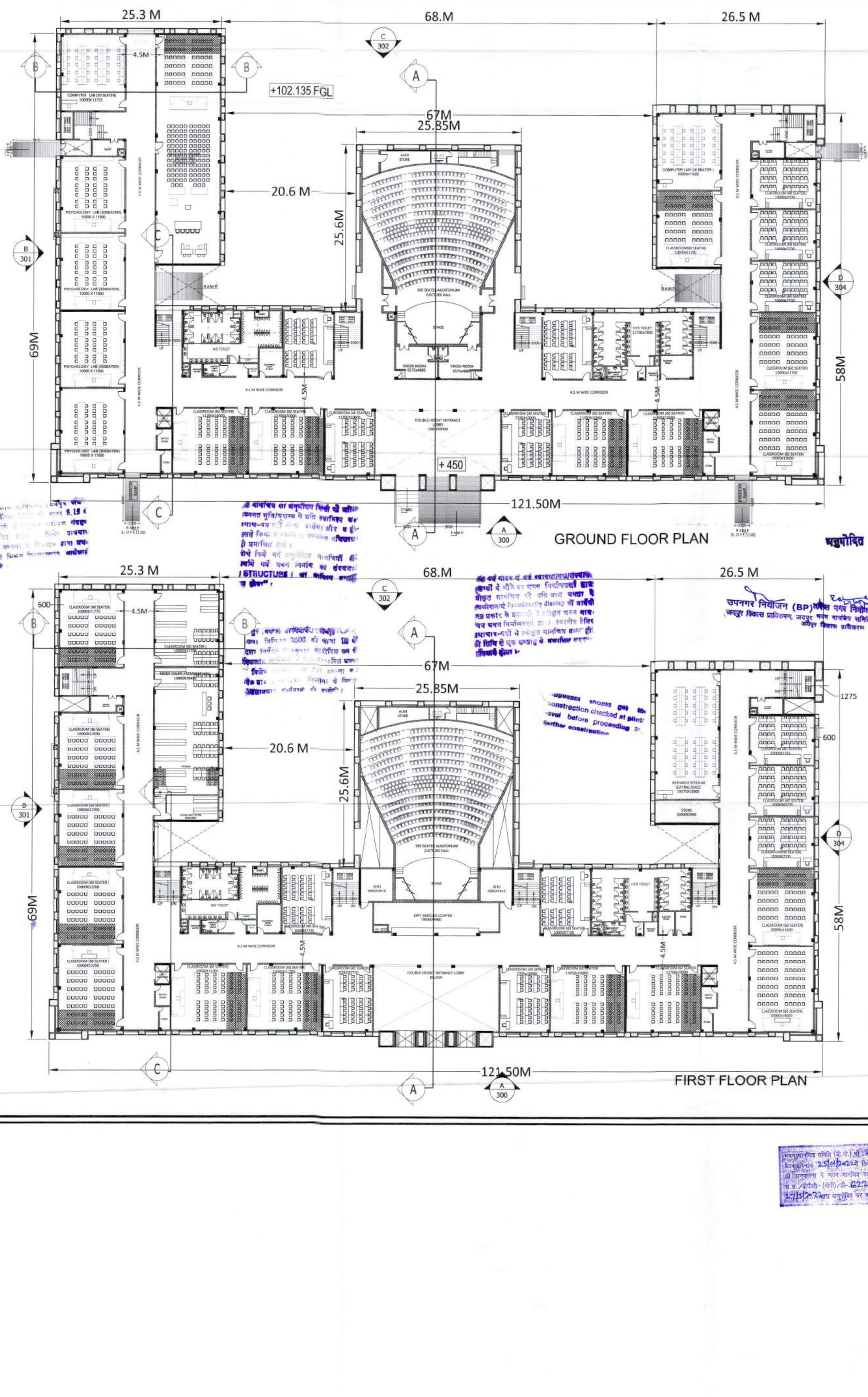
SIGNATURE & SEAL OF ARCHITECT

Subhash Chandra Devrath
Architect
CA/2012/56684

SIGNATURE & SEAL OF OWNER

Architect Hafeez Contractor

29 Bank Street, Bombay 400 023. Tel:2661920



DRG NO. NAB -3 -(03)

NOTES

THIS DEVELOPMENT HAVE BEEN CONCEIVED,DESIGNED AND DRAFTED ON THE BASIS OF THE FOLLOWING PARAMETERS:

1. ANY DISCREPANCY IN THE DRAWING IS TO BE BROUGHT TO THE NOTICE OF THE ARCHITECT IMMEDIATELY.
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5. DRAWING MUST BE READ IN CONJUNCTION WITH STRUCTURAL DRAWINGS.
6. THE SIZES OF ALL THE STRUCTURAL MEMBERS TO BE REFERRED FROM DRAWINGS OF STRUCTURAL CONSULTANT.
7. ALL CENTER LINE DIMENSIONS ARE WITH REFERENCE TO (0,0).

REVISIONS	DATE	DESCRIPTION	BY
5			
4	01-05-2013	ADDITION OF LIFT LOBBY AND STAIRCASE PROJECTION IN BLOCK F	DUE TO C.F.O. NOC.
3			
2			
1			

PROJECT MANAGEMENT CONSULTANT: DILLIGENT PMC

STRUCTURAL CONSULTANT: TRC Engineering (I) Pvt. Ltd.

SERVICES CONSULTANT: MEP — MEP CONSULTING ENGINEERS

PROJECT:
PROPOSED
'NEW ACADEMIC BLOCK - 3'
MANIPAL UNIVERSITY JAIPUR
KHASRA. 467,469,474,468/1,473,475,542,544
GRAM: DEHMI KALAN
TEHSIL: SANGANEER
JAIPUR, RAJASTHAN

DRG.TITLE:
GROUND FLOOR PLAN
&
FIRST FLOOR PLAN

REVISION	JOB NO.: 4401	DRG NO.:	NORTH:
	SCALE: A1:1:100	DATE:	
FILE:	DEALT BY:	CHECKED BY:	APPROVED BY:

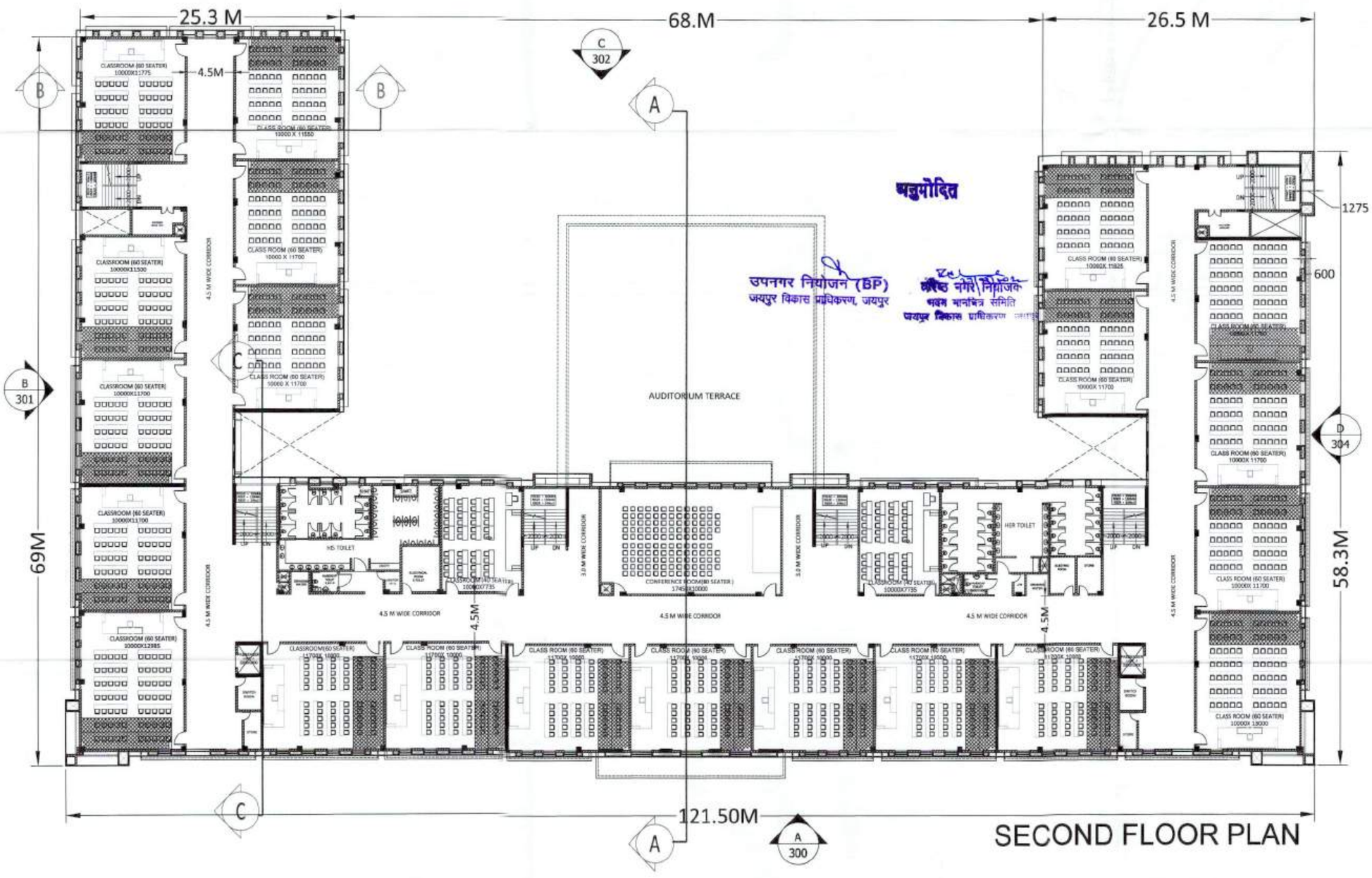
SIGNATURE & SEAL OF ARCHITECT — Subhash Chandra Devrath, Architect

SIGNATURE & SEAL OF OWNER

Architect Hafeez Contractor
29 Bank Street, Bombay 400 023.
Tel:2661920

उपनगर नियोजन (BP) उपनगर नियोजक
जयपुर विकास प्राधिकरण, जयपुर भवन मानचित्र समिति
जयपुर विकास प्राधिकरण जयपुर

भवन मानचित्र समिति (बी.पी.) की 25.4 वी बैठक दिनांक 25/07/2013 में लिये गये निर्णय की अनुपालना में भवन मानचित्र पत्रांक पविमा/स.स./बीपीसी (सीपी)/डी-827 दिनांक 31/5/22 द्वारा अनुमोदित कर जारी किये गये।



DRG NO. **NAB -3 -(04)**

NOTES

THIS DEVELOPMENT HAVE BEEN CONCEIVED, DESIGNED AND DRAFTED ON THE BASIS OF THE FOLLOWING PARAMETERS:

1. ANY DISCREPANCY IN THE DRAWING IS TO BE BROUGHT TO THE NOTICE OF THE ARCHITECT IMMEDIATELY.
2. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
3. ALL DIMENSIONS ARE FROM UNFINISHED TO UNFINISHED SURFACES UNLESS OTHERWISE SPECIFIED.
4. DRAWING NOT TO BE SCALED, ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
5. DRAWING MUST BE READ IN CONJUNCTION WITH STRUCTURAL DRAWINGS.
6. THE SIZES OF ALL THE STRUCTURAL MEMBERS TO BE REFEREED FROM DRAWINGS OF STRUCTURAL CONSULTANT.
7. ALL CENTER LINE DIMENSIONS ARE WITH REFERENCE TO (0,0)

REVISIONS	DATE	DESCRIPTION	BY
5			
4	01-05-2013	ADDITION OF LIFT CORE, STAIR CASE PRESSURIZATION, ETC.	DUE TO C.C.O. NOC
3			
2			
1			

PROJECT MANAGEMENT CONSULTANT
DILLIGENT PMC

STRUCTURAL CONSULTANT
TRC Engineering (I) Pvt. Ltd.

SERVICES CONSULTANT
MEP CONSULTING ENGINEERS

PROJECT:
PROPOSED
'NEW ACADEMIC BLOCK - 3'
MANIPAL UNIVERSITY JAIPUR
KHASRA. 467,469,474,468/1,473,475,542,544
GRAM: DEHMI KALAN
TEHSIL: SANGANEER
JAIPUR, RAJASTHAN

DRG.TITLE:
SECOND FLOOR PLAN
&
THIRD FLOOR PLAN

REVISION	JOB NO.: 4401	DRG NO.:	NORTH:
	SCALE: A1:1:100	DATE:	
FILE:	DEALT BY:	CHECKED BY:	APPROVED BY:

SIGNATURE & SEAL OF ARCHITECT
Subhash Chandra Devrath
Architect
CA 2012/56084

SIGNATURE & SEAL OF OWNER

Architect Hafeez Contractor
29 Bank Street, Bombay 400 023.
Tel:2661920

भवन मानचित्र समिति (बी.पी.) की 254 वीं बैठक दिनांक 25/01/2024 लिये गये निर्णय की अनुपालना में भवन मानचित्र पत्रांक जविप्रा/स.त./बीपीसी (बीपी)/बी-822 दिनांक 27/5/2024 द्वारा अनुमोदित कर जारी किये गये।

https://youtu.be/kjR_V9YSEH4

https://jaipur.manipal.edu/blog/?url=engineering-for-a-sustainable-future-embracing-the-call-for-eco-friendly

	Manipal University Jaipur - Academic Block 3
	Project Name – Manipal University Jaipur - Academic Block 3
	Project Code – 22GR0118
	Address: - Jaipur, Rajasthan
	Site area: - **14,809 m²** (As per online panel)
	Total built-up – **21,525 m²** (As per online panel)
	No. of buildings – 1 Building (Institutional)
	Compiled by GRIHA Council

General Comments:	

Criterion	Appraisal	Feedback Comments
Criterion 4	**Air and Soil Pollution Control**	
	Partly Mandatory – **4.2.1** Adopt at least six measures to minimize air and soil pollution during construction, with the first three strategies being mandatory. • **Provide 3m high continuous barricading along the site boundary/virtual boundary.** • **Provide wheel washing facility/gravel bed at all vehicular entrances and exits of the site.** • **Ensure DG sets have an exhaust with stack height of at least 2m from the top of the generator with a cowl.** • Ensure DGs are in compliance with CPCB norms.	**4.2.1 Submittal has been provided consisting of the following documents-** - Narrative, site visit reports, and compliance report have been submitted stating that the following strategies were adopted in the project to minimize air and soil pollution during construction: • Provision of 3 m high continuous barricading is provided along the site boundary. • Wheel washing facility is provided at the vehicular entry and exit of the site. • DG sets were not used on site. The demand is being met through campus level facility. Hence this measure is not applicable for the project.

	• Implement a spill prevention plan for storage of diesel, admixtures, curing compounds, bitumen, and other hazardous materials. • Ensure that fine aggregate, excavated earth, and other construction materials with a tendency to get airborne are covered or are sprinkled regularly with non-potable water. • Ensure sprinkling of water on unpaved pathways on the site with non-potable water. • Limit the speed of vehicular movement on-site to 10km/hr. • Ensure that vehicles carrying waste materials out of the site are covered	• Hazardous materials were stored in an enclosed space on an impervious surface. • Fine aggregate, excavated earth, and other construction materials with a tendency to get airborne were covered. • Speed limit on site has been restricted to 10km/hr. Signages for the same were displayed onsite. • Vehicles carrying waste materials out of the site were covered. - Photographs of the measures implemented onsite have been submitted. - Site management plan has been submitted in Criteria 6. However, location of wheel washing facility, Diesel storage and storage of fine aggregate, excavated earth, and other construction materials were not highlighted in the same. **Required:** • Submit site management plan (during construction stage) highlighting location of DG, wheel washing facility, Diesel storage, soil erosion channels, sedimentation tank, storage of fine aggregate, excavated earth, and other construction materials.
	4.2.2 Ensure that the soil erosion channels are constructed, and they are connected to a sedimentation tank in order to reduce movement of soil outside the site throughout the construction phase of the project.	**4.2.2 Submittal has been provided consisting of the following documents-** - As per the site visit reports, and compliance report, soil erosion channels and sedimentation tanks were provided on site. Photographs of the soil erosion channels & sedimentation tank have been submitted in due diligence I & II compliance documents. Site management plan highlighting location of soil erosion channels and sedimentation tanks provided on site has been submitted. **The documentation is complete.**
Criterion 5	**Topsoil Preservation**	

	5.1.1 Ensure that topsoil from disturbed areas on the site is preserved, stabilized, and its fertility is maintained throughout the construction period. Additionally, ensure that 100% of the soil requirement for landscaping including roof garden(s) is met through this preserved soil.	**5.1.1 Submittal has been provided consisting of the following documents-** - Narrative has been submitted stating the topsoil from the disturbed areas on-site is preserved and 100% of the soil requirement for project landscaping is met through this preserved soil. - Images of topsoil preservation have been submitted. - Calculation have been submitted in the online panel indicating the following: ▪ Total topsoil preserved – 1,135.6 m^3. ▪ Soil requirement for project landscaping – 572.6 m^3. ▪ Total area from where topsoil was excavated – 5,678 m^2. However, the same has not been highlighted in the site management plan. ▪ Percentage of fertile soil used in landscape – 198.32 %. - Soil fertility test report of the project from state level soil testing laboratory has been submitted. - A site management plan highlighting location of topsoil preservation area has been submitted. However, location of topsoil excavation area has not been highlighted. **Required:** • Submit a site management plan in .dwg format highlighting location of topsoil excavation/disturbed area for the project.
Criterion 6	**Construction Management Practices**	
	6.1.1 Adopt construction management practices (e.g., stacking and storage of construction materials at different stages of construction) and ensure safe disposal of waste generated during construction.	**6.1.1 Submittal has been provided consisting of the following documents-** - Narrative has been submitted stating that construction management practices such as stacking and storage of construction materials at different stages of construction were adopted on site and all the construction waste is safely disposed of through agreements with waste haulers and recyclers. - As per the site visit reports compiled by GRIHA officials, staging was adopted on site.

		- Photographs of construction management practices adopted on-site have been submitted. - Site management plan has been submitted highlighting the locations of different material & waste storage. - Log sheets of total quantities of waste generated on site as steel, wood, packaging materials, cement bags etc. have not been submitted. - Challans/Sell invoices reflecting full quantities of waste such as MS scrap, wood, packaging materials, cement bags etc. sold to recyclers have not been submitted. **Required:** • Submit detailed narrative about quantum of waste generated during construction, storage facilities for inert and hazardous wastes and measures employed for its safe disposal/recycling. • Submit Log sheets of total quantities of waste generated on site as steel, wood, packaging materials, cement bags etc. • Submit challans reflecting full quantities of waste such as steel, wood, packaging materials, cement bags etc. sold to recyclers.
	6.1.2 Adopt at least two strategies from the list, as given below, to minimize water consumption during construction, with the first strategy being mandatory. **Mandatory –** ○ **Use gunny bags, ponding technique, or curing compound.** ○ Meter and monitor the consumption of water during construction. ○ Use water-reducing admixtures in concrete mix. ○ Use treated wastewater and/or captured storm water	**6.1.2 Submittal has been provided consisting of the following documents-** - As per the site visit reports compiled by GRIHA officials, the following measures were adopted in the project: • Use of gunny bags and ponding technique for curing of columns and slabs, respectively. Photographs of the same has been submitted. • Use of water reducing admixtures (SAINT GOBAIN CHRYSO Delta G6541C-ADS) in concrete. Batch mix report of M25, M30 & M40 concrete grades were shared during the visit indicating the use of admixture was submitted. However, purchase order and technical specification sheet of the admixture was not submitted which confirms water reducing properties. Further, design mix reports for M25, M30 & M40 concrete grades have not been submitted.

		Required: • Submit purchase order and technical specification sheet of SAINT GOBAIN CHRYSO Delta G6541C-ADS confirming it's water reducing properties. • Submit design mix reports for M25, M30 & m40 concrete grades highlighting the make and name of admixtures used in the concrete grades.
Criterion 23	**Safety and Sanitation for Construction Workers**	
	Mandatory – **23.1.1** Ensure compliance with the requirements of NBC 2016 for all the following: Part 1: Provision of necessary safety equipment and safety measures for construction workers. Part 2: Provision of clean drinking water, hygienic working and living conditions, and sanitation facilities for the workers. Part 3: Provision of crèche facility for children of construction workers in case their families are allowed to work/live at the construction site. *Applicability check: If there are only male workers employed and residing on site, the project is exempt from Appraisal 23.1.1 - Part 3*	**23.1.1 Submittal has been provided consisting of the following documents-** - Narrative, drinking water test report and date stamped photographs have been submitted indicating the following: • Construction workers were wearing hard-hats and safety boots. • Temporary railings were provided on the staircases. • Safety nets were provided in accident-prone areas as well as adjacent to the scaffolding. • Safety equipment such as gloves and safety harnesses were provided to workers depending on the nature of their work. • Safety signage in local languages were displayed at multiple locations on site. • First aid facility was provided on site. • Drinking water facility was provided on site and in the labour accommodation area. Drinking water test report was submitted by the project team along with the compliance report. • Clean and hygienic toilets were provided for the construction workers on site and in the labour accommodation area. • Clean and hygienic bathing area was provided at the labour accommodation area. • Clean and hygienic labour accommodation was provided for the construction workers. The hutments were made of GI sheets and sharp edges of the same were secured.

		• The hutments had provision for daylight and ventilation. General cleanliness was maintained in the area surrounding the labour accommodation. • Dustbins were provided in the labour accommodation area. • Creche facility was provided near the labour accommodation. Site visit reports confirm the same. **The documentation is complete.**
	23.1.2 Adopt one alternative out of the following for the construction workers on-site. Alternative 1: Provide a grocery store/canteen within the site premises and/or labour accommodation. Alternative 2: Organize at least two events during the entire construction phase to create environmental awareness among the construction workers.	**23.1.2 Submittal has been provided consisting of the following documents-** - As per the due diligence II site visit, two environmental awareness programs were conducted for the construction workers during the construction phase. The photographs have been submitted highlighting awareness programs have been conducted among the construction workers. **The documentation is complete.**

Criterion 26	**Positive Social Impact**	
	Mandatory – **26.1.4** Ensure that tobacco smoking is prohibited on-site during the entire construction phase.	**26.1.4 Submittal has been provided consisting of the following documents-** - Photographs have been submitted indicating that tobacco is prohibited on site and 'no smoking' signages were displayed in multiple locations. Site visit report compiled by GRIHA Council officials and the compliance report submitted by the project team confirms the same. A non-smoking policy document highlighting prohibition of tobacco smoking within the site premises during the construction phase has been submitted. **The documentation is complete.**