Manipal University Jaipur's Plans to Upgrade Existing Buildings for Higher Energy Efficiency

Manipal University Jaipur is esteemed as a center of intellectual engagement, fostering innovative thought, research, and the dissemination of knowledge. Acknowledging the significant responsibilities that accompany its influence, the institution is increasingly aware of its duty to confront the environmental issues of our era. The forward-thinking Manipal University Jaipur has made a commendable commitment to transform its campus into a model of sustainability. Considering the pressing nature of climate change, the university has pledged to enhance the energy efficiency of its existing buildings over the next ten years. The initial phase of this ambitious initiative involves conducting thorough energy audits of all campus facilities. These audits will yield critical insights into current energy usage patterns, pinpointing opportunities for enhancement. With the findings from these audits, Manipal University Jaipur will embark on a comprehensive retrofitting and renovation of its buildings. This process will involve upgrading insulation, windows, and HVAC systems to align with contemporary energy-efficient standards. To further diminish its carbon footprint, the university plans to incorporate renewable energy solutions, such as solar panels and wind turbines, within its campus. This initiative not only aims to provide cleaner energy but also serves as a valuable educational resource for students. Additionally, the university intends to evolve its buildings into "smart" facilities by implementing advanced building management systems. These systems will facilitate real-time monitoring of energy consumption, enabling prompt adjustments and optimizations. Understanding the significance of educating its community, Manipal University Jaipur is committed to integrating sustainability and energy efficiency into its academic programs. Workshops, seminars, and awareness initiatives will actively involve students and staff in this sustainable endeavor. The advantages of a thorough sustainability initiative reach well beyond the confines of the university campus. By enhancing the energy efficiency of its existing buildings, Manipal University Jaipur serves as a significant model for the wider community. This initiative illustrates that sustainable practices are not only ecologically sound but also financially feasible over time.

7 AFFORDABLE AND CLEAN ENERGY

Insulation and Air Sealing

Efficient Windows and Doors

Install Double or Triple-Pane Windows

Energy-Efficient Doors

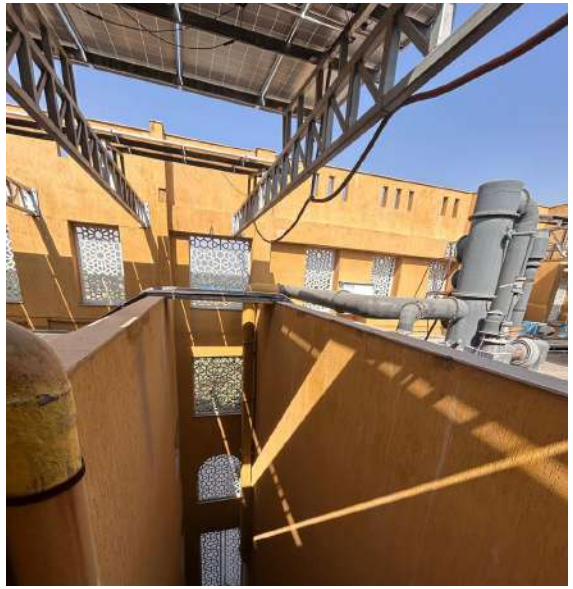
Low-E Coatings

Seal Leaks

Efficient Heating and Cooling

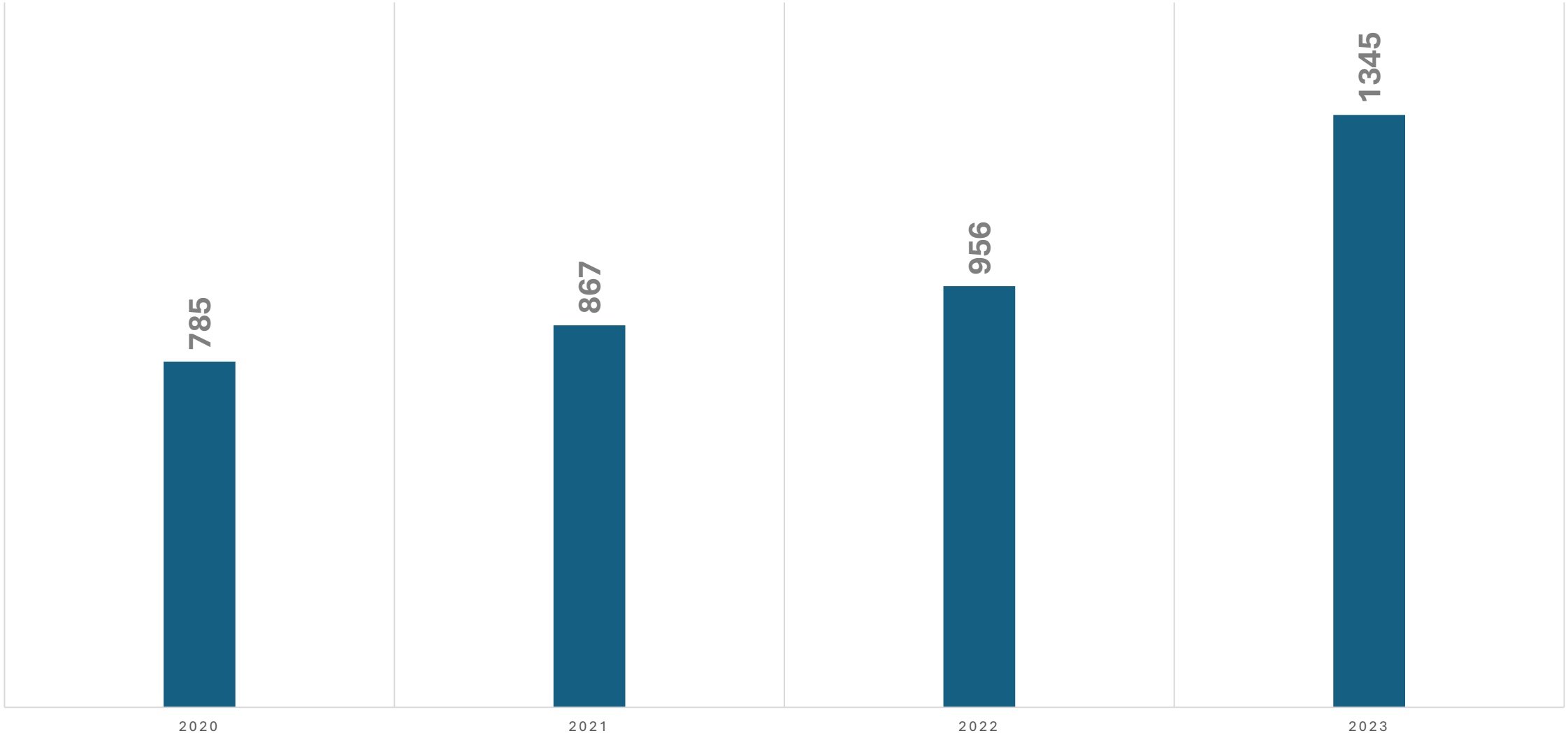
Efficient Heating and Cooling

Upgrade HVAC Systems




Number of Smart Class rooms Numbers
35
30
25
20
15
10
5
0
5
8
17
32
2020
2021
2022
2023

NUMBER OF LEDS INSTALLED NUMBERS OF LEDS



MANIPAL UNIVERSITY
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Academic Block: 03 LAW & MANAGEMENT

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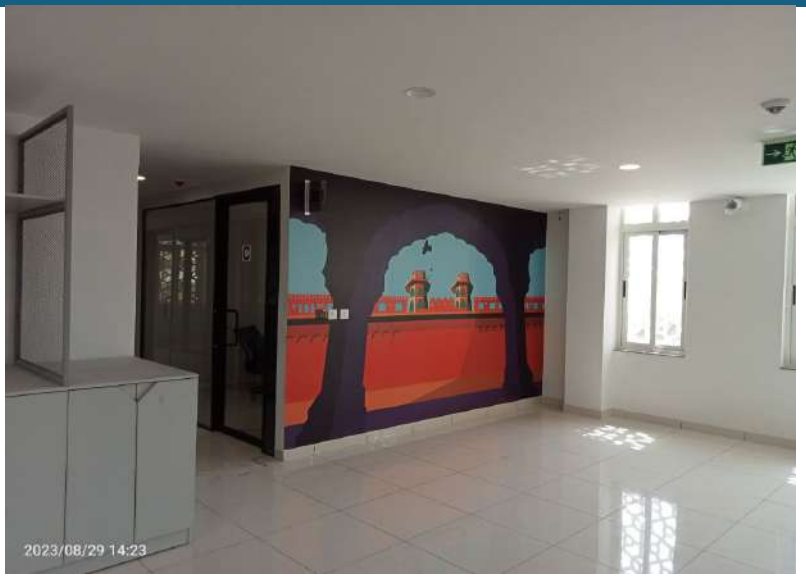

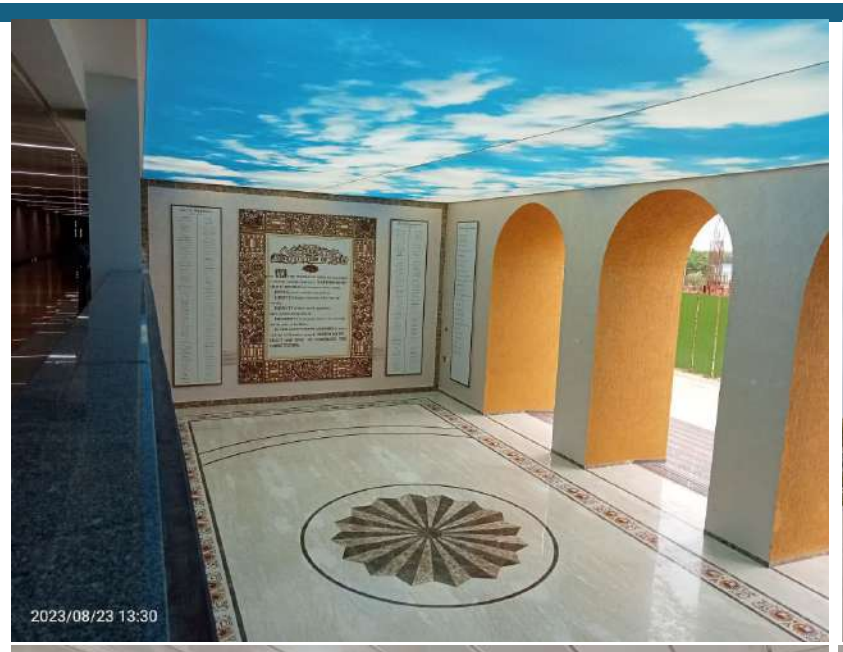

MANIPAL UNIVERSITY
JAIPUR

LHC - Progress Report

	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.**