

SNU Hostel, Dadri

Cluster 4 & 5

Schematic Design Basis Report (DBR)

MEP SYSTEMS

Submission (R0) : Feb 20, 2018

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Revised (R4): Nov 30, 2018

Revised (R5): July 04, 2019

Revised (R6): July 17, 2019

Revised (R7): Jan. 27, 2020

Client : Shiv Nadar Foundation

Architects : AEON Design & Development LLP

MEP Consultants : AEON Integrated Building Design Consultants LLP,
3rd Floor Tower A-23, Sector -9, Noida-201301
Tel # 0120-4693450

1.0 PREAMBLE

This report represents the preliminary design for the Hostel Cluster – 4, 5 and Dining block at Shiv Nadar University. Project site is located on Main Dadri Road. The purpose of this report is to present the preliminary design for the project which once approved will be developed into a full-fledged scheme.

The report is based on the latest architectural drawings and area statement dated November 28, 2018 wherein the area statement of proposed development is as follows:

HOSTEL – 4 BUILT-UP AREAS			
S. No.	DESCRIPTION	AREA (SQMT)	AREA (SQFT)
1	GROUND FLOOR	3650.03	39288.6
2	FIRST FLOOR	3650.03	39288.6
3	SECOND FLOOR	3648.31	39270.40
4	THIRD FLOOR	3648.31	39270.40
5	FOURTH FLOOR	3648.31	39270.40
6	FIFTH FLOOR	3648.31	39270.40
7	TERRACE (MUMTY)	301.1	39270.40
8	MACHINE ROOM & OHT	495.34	39270.40
	TOTAL	22689.74	244232.36
HOSTEL – 5 BUILT-UP AREAS			
S. No.	DESCRIPTION	AREA (SQMT)	AREA (SQFT)
1	GROUND FLOOR	3703.92	39868.99
2	FIRST FLOOR	3703.92	39868.99
3	SECOND FLOOR	3664.94	39449.41
4	THIRD FLOOR	3664.94	39449.41
5	FOURTH FLOOR	3664.94	39449.41
6	FIFTH FLOOR	3664.94	39449.41
7	TERRACE (MUMTY)	301.94	3250.08
8	MACHINE ROOM & OHT	495.34	5331.84
	TOTAL	22864.88	246117.56
DINING BLOCK			
1	GROUND FLOOR	1290	13900
2	TERRACE FLOOR		0
	Total Built up Areas	46844 Sq.Mtr	504042

Prior to setting out for design, following goals have been established which will be imbibed into the project:

- Code Compliance
- Environment Protection
- Energy Conservation
- Water Conservation
- Occupant Comfort
- Fire Safety and Security
- Modularity and Redundancy
- Measurement & Verification
- Cost Effectiveness

Besides above, an integrated design approach will be pursued so that project ranks high on the sustainability scale and the green rating may be pursued, if desired. The equipment selection shall be optimized keeping in view full load as well as part load characteristics.

Both International and local codes/standards shall be referred while developing the design. In absence of same, acceptable design standards as per past experience shall be used.

In general, following codes/standards shall be backbone of design:

- National Building Code of India 2016
- Bureau of Indian Standards
- Energy Conservation Building Code 2017
- ASHRAE Handbooks
- National Electric Codes
- Green Building Standards
- NFPA

4.0 ENERGY & WATER CONSERVATION STRATEGY

4.1 Air-conditioning & Ventilation System

Air conditioning & ventilation system design shall be planned with energy conservation features to reduce consumption and operating costs where economically feasible. Some of proposed strategies are as follows:

- a. High COP (Low IKW / TR) water cooled chilling machines with VFD
- b. Variable speed secondary chilled water distribution system.
- c. Use of VFD for all higher rating motors. EC motors for smaller rating equipment shall be targeted.
- d. All motors shall be high efficiency (IE-3 minimum).
- e. Selection of high efficiency fans for air handling units and ventilation system.
- f. Cooling tower shall be selected for 5 Deg F approach, minimum drift loss, low noise level and energy efficient motor.

4.2 Electrical & LV Systems

- a. Timers & photocell sensors shall be used to switch ON / OFF external landscape and facade lighting. Same is available in existing feeder pillar as confirmed by SNF.
- b. LED's shall be used for Common areas and rooms.
- c. All cables shall be suitably selected to avoid heating during use in order to reduces losses and improve reliability.

4.3 Plumbing & Fire Fighting

- a. Pumps & equipment selected on "best" energy efficiency point.
- b. Ground water recharge by harnessing the rain falls on site thru artificial lake at site.
- c. Low water flow fixtures and fittings in toilets.