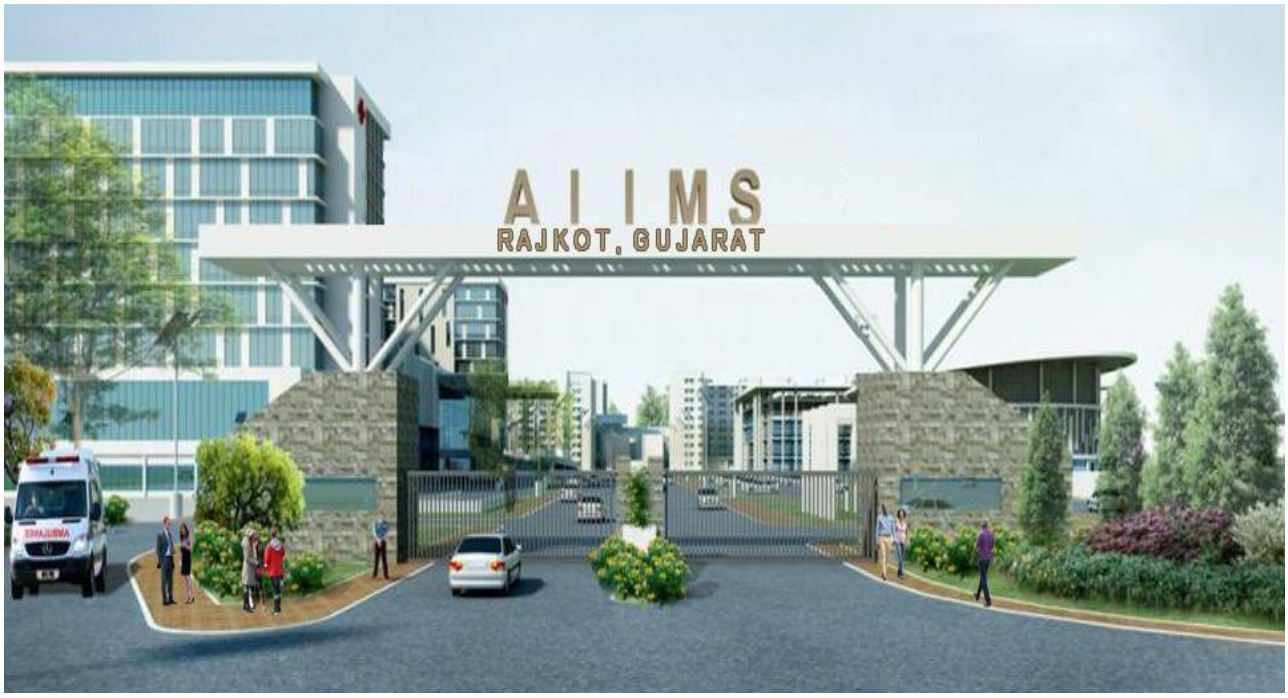
MINISTRY OF HEALTH & FAMILY WELFARE

GOVERNMENT OF INDIA



PRELIMINARY PROJECT REPORT

ALL INDIA INSTITUTE OF MEDICAL SCIENCES

AT

RAJKOT, GUJARAT

HITES
HLL INFRATECH SERVICES LTD.
Subsidiary Of HLL Lifecare Ltd. ,
A Government Of India Enterprise
Coorporate Office : B-14 A,Sector-62,Noida-201307,Uttar Pradesh,India
Tel : +91 120 4071500 I Fax : +91 120 4071513 I www.lifecarehll.com

EXECUTIVE SUMMARY

SETTING UP OF AIIMS AT RAJKOT, GUJARAT

PRELIMINARY COST ESTIMATES:

SL NO.	ITEM	AMOUNT IN RS.
1	BUILDING & SERVICES	912,30,51,050.00
2	FURNITURE	25,75,00,000.00
3	MEDICAL EQUIPMENT	185,32,00,000.00
4	CONSULTANCY FEE	58,80,72,532.00
5	STATUTORY APPROVALS	50,00,000.00
6	PRE CONSTRUCTION ACTIVITIES	15,00,00,000.00
	GRAND TOTAL	1197,68,23,582.00
	SAY	Rs. 1198.00 CRORES

PROPOSED FACILITIES:

Sl. No.	Facility	Area in Sqm.	No. of Floors
1.	Hospital Building – 720 Beds	71,000	(B+G+5)
2.	Ayush – 30 Beds		
3.	Teaching Block (100 seat Medical College +60 seat Nursing college + Admin)	22,500	(G+5)
4.	Auditorium (500 seater + Conference halls of 150 & 100 seater)	2,500	(G+1)
5.	Animal House	3,000	(GF)
6.	Service Block		
7.	Night Shelter (250 persons)	3,700	(G+3)
8.	Guest House (14 rooms)	650	(G+2)
9.	Director's Bungalow	380	(G+1)
10.	Type-VI (6 block – 1 units)	1,620	(G+1)
11.	Type-V (1 block – 24 units)	4,920	(G+5)
12.	Type-IV (1 block – 21 units)	3,150	(G+5)
13.	Type-III (1 block – 18 units)	1,440	(G+2)
14.	Type-II (3 block – 36 units)	7,560	(G+5)
15.	PG Hostel – D1 type (1 block - 312 capacity)	7,400	(G+5)
16.	Dining Block	1,730	(G+2)
17.	UG Hostel- Girls (1 block - 240 students)	5,750	(G+5)
18.	UG Hostel- Boys (1 block - 240 students)	5,750	(G+5)
19.	Working Nurses Hostel (for 150 nurses)	4,000	(G+7)
20.	Nursing Student Hostel (for 288 students)	4,500	(G+7)
21.	Convenient Shopping Complex & Restaurant	250	(GF)
	TOTAL AREA (Sqm.)	1,51,800	

Project Management Consultant: HLL Infra Tech Services Ltd. (HITES)

CONTENTS

1.0 INTRODUCTION

1.1 About HITES
1.2 About AIIMS
1.3 About SITE

1.1 INTRODUCTION ABOUT HITES

HLL Infra Tech Services Limited, popularly known as 'HITES' is a 100% subsidiary company of HLL Lifecare Ltd, a GoI Enterprise under the administrative control of Ministry of Health & Family Welfare. HITES is specialized for infrastructure development and procurement of medical equipment and devices in healthcare sector.

HITES is uniquely placed in the industry as a healthcare delivery company offering the following services:

1. Infrastructure Development
2. Procurement Consultancy
3. Facility Management
4. Bio-Medical Engineering

Infrastructure Development - Offers comprehensive service from concept to completion in setting up any healthcare facility including design, engineering, construction and project management etc.

Procurement consultancy - Offers services for the procurement of medical equipment including supply installation testing commissioning and warranty / CMC management.

Facility Management - It provides facility management services (operation & maintenance) of buildings & allied infrastructure as well soft services like housekeeping, patient reception and management, security etc.

Bio-Medical Engineering - Involved in framing of specification, technical evaluation, inspection, Testing & Calibration, Third Party Inspection etc.

HITES has its own full-fledged in-house design cell, having proven expertise in the medical infrastructure.

HITES has a dedicated team of qualified and experienced professionals in all the fields of Project & Construction Management, Procurement, Bio Medical Engineering and Facility Management.

Uniqueness: "Design, Build, Procure, Install, Commission & Maintain healthcare facilities"

MoHFW, GOI has declared HITES as "Executing Agency" for execution of various infrastructure projects of and is also designated as a National Procurement Support Agency (NPSA) for procurement of medical equipment. With a team of highly qualified and experienced professionals it has proven expertise to undertake consultancy assignments including bid process management, procurement of goods, as well as project planning and monitoring.

Major Projects:

- PMC / EXECUTING AGNECY
  - Setting up new AIIMS at Bathinda (Punjab), Gorakhpur (U.P) and Gorakhpur (Assam). HITES is executing the projects in EPC (Design & Build) model
  - Upgradation of 12 GMCIs under PMSSY III
  - Three GMCIs at Agra, Kanpur and Cuttack in Phase IV of PMSSY
  - Upgradation of JIPMER Puducherry
  - Setting up 500 bedded pediatric cardiac center at UNMICRC Ahmedabad
  - Setting up laboratories and lab for CDSCO in Ghaziabad and CDSCO zonal office at Chennai
  - Setting up two 200 bedded hospital in Republic of Guinea under LOC by GOI
  - National Institute of Allied Health Sciences, Delhi
  - Construction of Hadron Beam (Protron Therapy) and Support Facility for TMC at Kharghar, Navi Mumbai.
  - Construction of Hematolymphoid. Women & Children Centre and Radiological Research Unit & Administrative Block(RRU) at ACTREC, Kharghar, Navi Mumbai
  - Setting Medical College & Hospital at Konni, Kerala
  - Construction of main building (Innovation cum Incubation Centre) at Life Science Park, Trivandrum
  - Infrastructure Development of National Institute of Speech & Hearing Campus.
  - Construction of Advanced Mother & Child Centre (Phase-I) at PGIMER, Chandigarh

- PROCUREMENT SUPPORT AGENT
  - 39 GMCIs being upgraded under PMSSY III
  - 4 GMCIs under PMSSY IV, new AIIMS
  - AIIMS at Bhopal, Bhubaneswar, Jodhpur, Patna, Raipur, Rishikesh
  - GMCIs being upgraded under PMSSY I and II.
  - National Cancer Institute at AIIMS Jhajjar
  - Medical equipment for 6 Medical Colleges in M.P.
  - Victoria Hospital, Republic of Seychelles

1.2 INTRODUCTION ABOUT AIIMS

The All India Institute of Medical Science (AIIMS), New Delhi was established 1956 by an Act of Parliament as an institution of National importance. Over the period, the indoor patient bed capacity increased from 800 at the outset to cover 2500. Thousands of patient across the country as also the neighbouring countries come to AIIMS every day for treatment. Moreover, to keep pace with the emerging needs, new centres such as Dr. R.P. Centre for Ophthalmic Science, Institute of Rotary Cancer Hospital, the twin centres for Cardiothoracic Science & Neurosciences, Centre for Dental Education, JP Narain Apex Trauma Centre have been developed in the Campus. The Blocks for surgery, Mother & Child Care, New OPD etc. have also come about in the adjoining Masjid Moth area.

The AIIMS has emerged as a brand with the main campus becoming congested and crowded and no scope for further expansion, the 2nd campus has been developed on a 300 acre land at Jhajjar, Haryana to meet AIIMS urgent needs; immediate priority in the clinical domain being the establishment of National Cancer Institute. The Key focus on Research & Innovation is to create a World Class Biomedical Research Infrastructure. In the education domain, however, a full-fledged centre for Excellence in Nursing Education & Research is proposed for establishment in the current plan period.

Increased Demand for Super Speciality Care:

The continued increase in patient load and growing demand for super speciality care, at the AIIMS, New Delhi, has been a cause of hardships to the public at large. Thus the need was felt for expansion of tertiary care institutions across the country with the aim of spreading the super speciality care and correcting regional imbalances. Government of India took initiative to set up new AIIMS-like institutes and undertake strengthening / up-gradation of existing institutions under the PMSSY (Pradhan Mantri Swasthya SurakshaYojana) in a phased manner as under:

Phase – I
Setting up of Six new AIIMS like institutions (at Bhopal-MP, Bhubaneshwar-Orissa, Jodhpur-Rajasthan, Patna-Bihar, Raipur-Chhattisgarh and Rishikesh-Uttarakhand) and up- gradation of 13 Government Medical Colleges;

Phase – II
Setting up of two new AIIMS-like Institutes (Rae Bareli – Uttar Pradesh and Raiganj (West Bengal) and up-gradation of 6 Government Medical Colleges;

Phase – III
Upgradation of 39 existing Government Medical Colleges across various locations of India.

Phase - IV
Upgradation of 04 existing Government Medical Colleges and setting up AIIMS at Mangalagiri (Andra Pradesh), Nagpur (Maharashtra), Gorakhpur (Uttar Pradesh), Kalyani (West Bengal)

Phase - V
AIIMS at Bathinda (Punjab), Guwahati (Assam), Jammu, Kashmir, Bilaspur (Himachal Pradesh), Madurai (Tamilnadu) and Bihar

Phase – VI
AIIMS at Gujarat and Deoghar (Jharkhand)

To facilitate governance issues, AIIMS-Act 1956 was amended by enactment of AIIMS (Amendment) Act-2012, which brought new AIIMS-like institutes under the ambit of AIIMS Act- 1956, providing for establishment of more than one AIIMS at various locations. Each new AIIMS- like institutes is thus an institution of National Importance under the Act.

These new AIIMS-like institutions are being established by an Act of Parliament on the lines of the original AIIMS-New Delhi which imparts both undergraduate and Post graduate medical education in all its branches and related fields, along with nursing and paramedical training to bring together in one place educational facilities of the highest order for training of personnel in all branches of healthcare activity.

Bridging Healthcare Infrastructure gap:

From Academic Session 2013-14, the total number of MBBS seats in the six new AIIMS-like Institutes went upto 600, providing an opportunity to an additional 300 MBBS aspirants. With these new additions, the overall availability of MBBS seats in the country rose to 42,169. According to the Medical Council of India, MBBS seat availability, from 398 Medical Colleges is 52,105 for the year 2014-15. Health Ministry is striving to achieve the WHO target doctor-patient ratio of 1:1000 by 2021 which at present is 1:2000. The government plans to increase the overall availability of MBBS seats to 80,000 with an aim to reduce the shortage of doctors, which is currently pegged at around 8,00,000.

It may be mentioned that the High Level Expert Group (HLEG), instituted by the Planning Commission, in its report had opined that production of allopathic doctors in the country as per the current trends is both inadequate and uneven. HLEG proposed a phased addition of around 200 colleges during 12^{th} and 13^{th} Plan periods for equitable health care accessibility across the States. Such a measure could approximate WHO norms of doctor per 1000 population by 2028, largely as under:

Year	Population Served for Doctor
2017	1731
2022	1451
2025	1201
2028	1000

In terms of hospital beds too, with a strength of around 1.37 MN beds (0.9 beds/1000 population) India ranks among the lowest far below the global average of 2.9 beds.

Government of India's initiative in setting up new AIIMS-like institutes in different States, thereby promoting regional spread of Super specialty case and its accessibility on one and up-gradation of existing Medical Colleges set up 20 years ago progressively on the other, over the plan periods is seen as a step in the direction of furtherance in reduction of gaps between the demand and supply of doctors as also the hospital beds; this is also in line with the Government of India's high powered Committee recommendations (HLEG)

This Project Report pertains to setting up a new AIIMS-like institution at Rajkot.

The site at Khanderi, Rajkot, Gujarat has been selected by the Central High Level Team after visiting 2 eligible sites (Khanderi & Khirisara) submitted by the Government of Gujarat and based on the challenge method.

1.3 INTRODUCTION ABOUT SITE

The proposal envisages setting up a new AIIMS-like institution at Rajkot.

The salient features of the selected site are broadly as under –

- Government Land totaling 298 acre is available in combination of Survey No 16p3 measuring 665908 sq. mt.(164 acres and 22 gunthas) of village Khanderi in Paddhari Taluka and adjacent S.no 197 of VIllage Para Pipaliya of Rajkot Taluka measuring 543592 sq mt (134 Acre 13 guntha).
- The shape of the plot is regular
- The soil strata is which is Murrum-soft rock-hard rock perfect for civil construction.
- The land is owned by the Government. The land is open and unoccupied, free of any encroachment.
- The terrain is such that there is no permanent water logging
- *It is directly accessible through Rajkot-Jamnagar National Highway and proposed 45mt wide road of Rajkot Urban Development Authority. The land is close to Rajkot and is 6 km from Municipal Corporation's limits.

Transport facility:

- Rajkot city is well connected with air, rail and road.
- At present there are daily 5 flights for Mumbai and daily flight to New Delhi.
- Rajkot has Railway Junction and there are large no. of trains connecting major cities and states of India.
- Rajkot and whole Saurashtra is well connected with roads and bus services.
- The proposed site are within 12-15 kilometers from Airport, Railway junction and Rajkot Bus stop

Brief about the City:-

Rajkot is the fourth-largest city in the state of Gujarat, India, after Ahmedabad, Surat and Vadodara. Rajkot is the centre of the Saurashtra region of Gujarat. Rajkot is the 35th-largest urban agglomeration in India, with a population of more than 1.2 million as of 2015. Rajkot is the eighteenth-cleanest city of India, and is the 22nd-fastest-growing city in the world. The city contains the administrative headquarters of the Rajkot District, 245 km from the state capital Gandhinagar, and is located on the banks of the Aji and Nyari rivers. Rajkot has been under different rulers since it was founded. Rajkot was home to many personalities like Mohandas Karamchand Gandhi. Rajkot is in a transition period of growing cultural, industrial and economical activities. Rajkot is the 26th largest city of India and the 22nd fastest growing urban area of the world.

Predominant health problem of Rajkot and Saurashtra region

Factors affecting health in this region:

1. Rapid growth and development. Rapid urbanization.
2. Huge migration of industrial and agricultural laborers. Migration is from various tribal district of Gujarat state and also from other states or industrial purpose.
3. Tobacco chewing is very high in Saurashtra region

All these factors lead to following problems.

a). Road Traffic accidents and industrial accidents

b). Non-communicable diseases like: Diabetes, Hypertension, Cardiac diseases, Suicides etc.

c). Tuberculosis and HIV

d). Vector borne diseases like: Malaria, Dengue, Chikungunya etc.

e). Oral cancer. Renal Stone, Skin infections, Diarrhoeal diseases

f). Recent outbreak reported for Swine flu, CCHF, Measles, Malaria

Gaps in Tertiary Health care facility:-

- Cardiothoracic Surgery department and Bypass Surgery Facilities not available.
- Cardiac Cath Lab and specialist services by cardiologist not available.
- Intensive Burns care facility not available.
- Kidney Transplant and Organ Transplant services are not available.
- IVF facility not available
- A separate Cancer care unit and Radiotherapy facility not available.
- A separate Neurosurgery, Plastic surgery and Urology department not available.
- Neurology, Nephrology, Cardiology, Endocrinology and gastroenterology services are not available

Location and Climatic Conditions:-

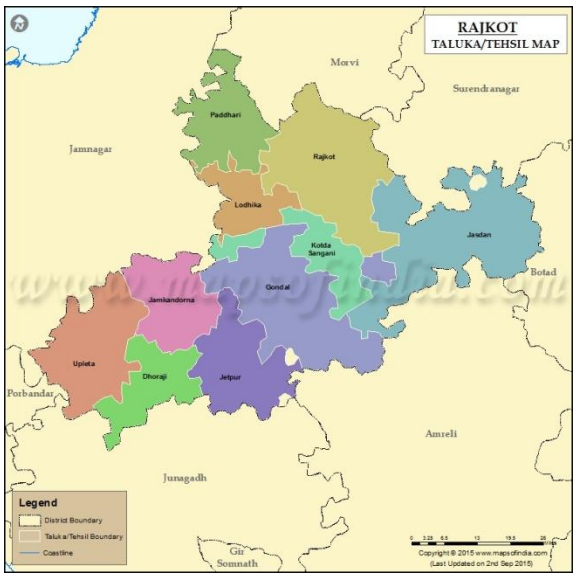
Rajkot is located at 22.3°N 70.78°E. It has an average elevation of 128 metres (420 ft). The city is located on the bank of Aji River and Nyari River which remains dry except the monsoon months of July to September. The city is spread in the area of 170.00 km².

Rajkot is situated in the region called Saurashtra in the Gujarat state of India. The significance of Rajkot's location is owing to the fact that it is one of the prime industrial centres of Gujarat. Rajkot has a central location in the area called the Kathiawar peninsula. The city is located within the Rajkot district in Gujarat. Rajkot city is the administrative headquarters of the district of Rajkot. The district is surrounded by Botad in the east, and Surendranagar in the north, Junagadh and Amreli in the south, Morbi in the northwest and Jamnagar in the west and Porbandar in the southwest.

Rajkot has a semi-arid climate, with hot, dry summers from mid-March to mid-June and the wet monsoon season from mid-June to October, when the city receives 590 mm of rain on average. The months from November to February are mild, the average temperature being around 20 °C, with low humidity.

One of the most important weather phenomena that is associated with the city of Rajkot is the cyclone. The cyclones generally occur in the Arabian Sea during the months after the rainy season. The region experiences a lot of rainfall and high-speed winds during the time of the year after the monsoon season as well as the months of May and June. However, June experiences lesser amount of rainfall and winds than the post-monsoon time. Thunderstorms are another important part of the Rajkot weather in the months of June and July. During summer time, the temperature ranges between 24 °C and 42 °C. In the months of winter, Rajkot temperature varies between 10 °C and 22 °C but on a whole winters are pleasant.

The Geographical location parameters of the city are as follows:

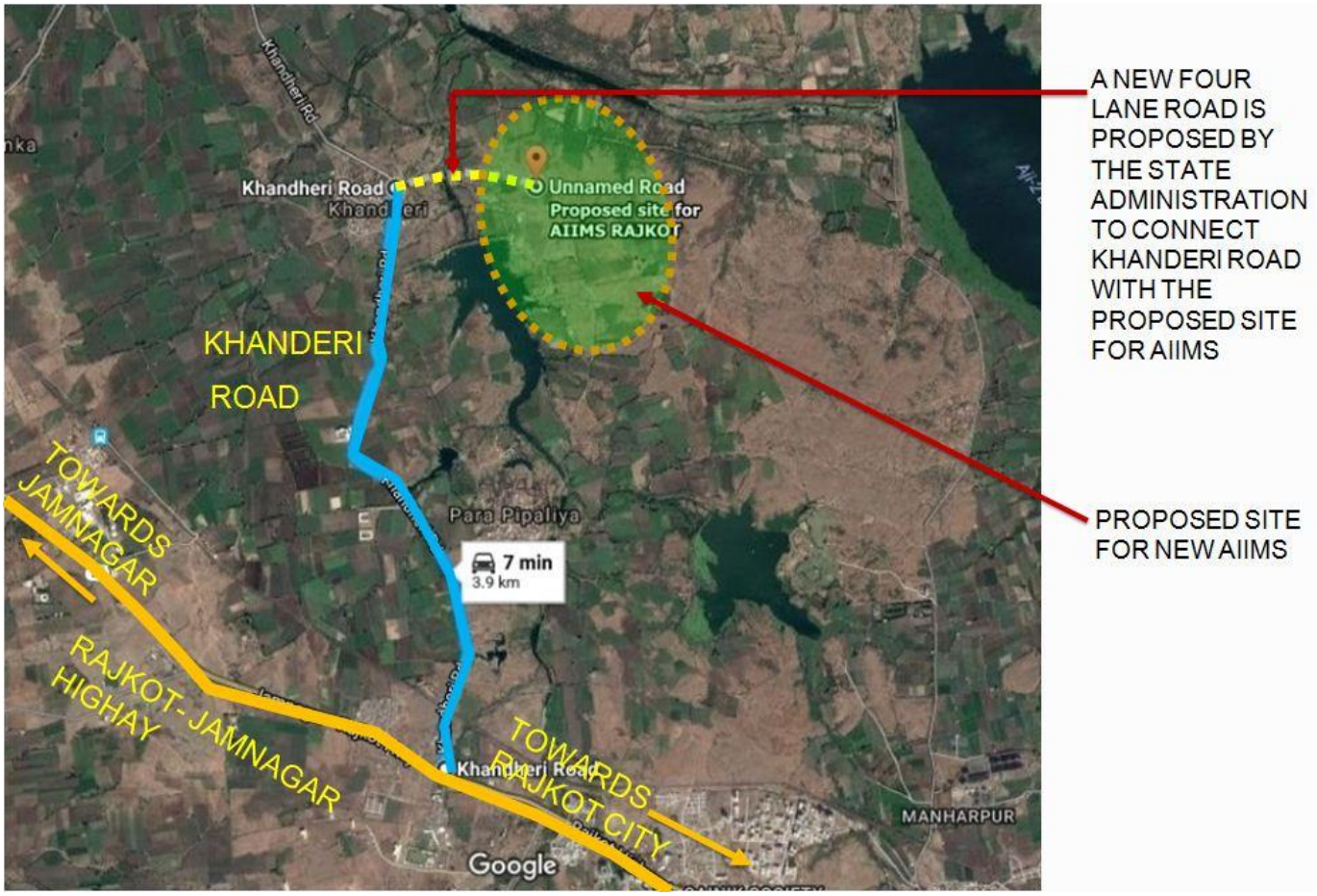


Proposed Site for AIIMS Rajkot,

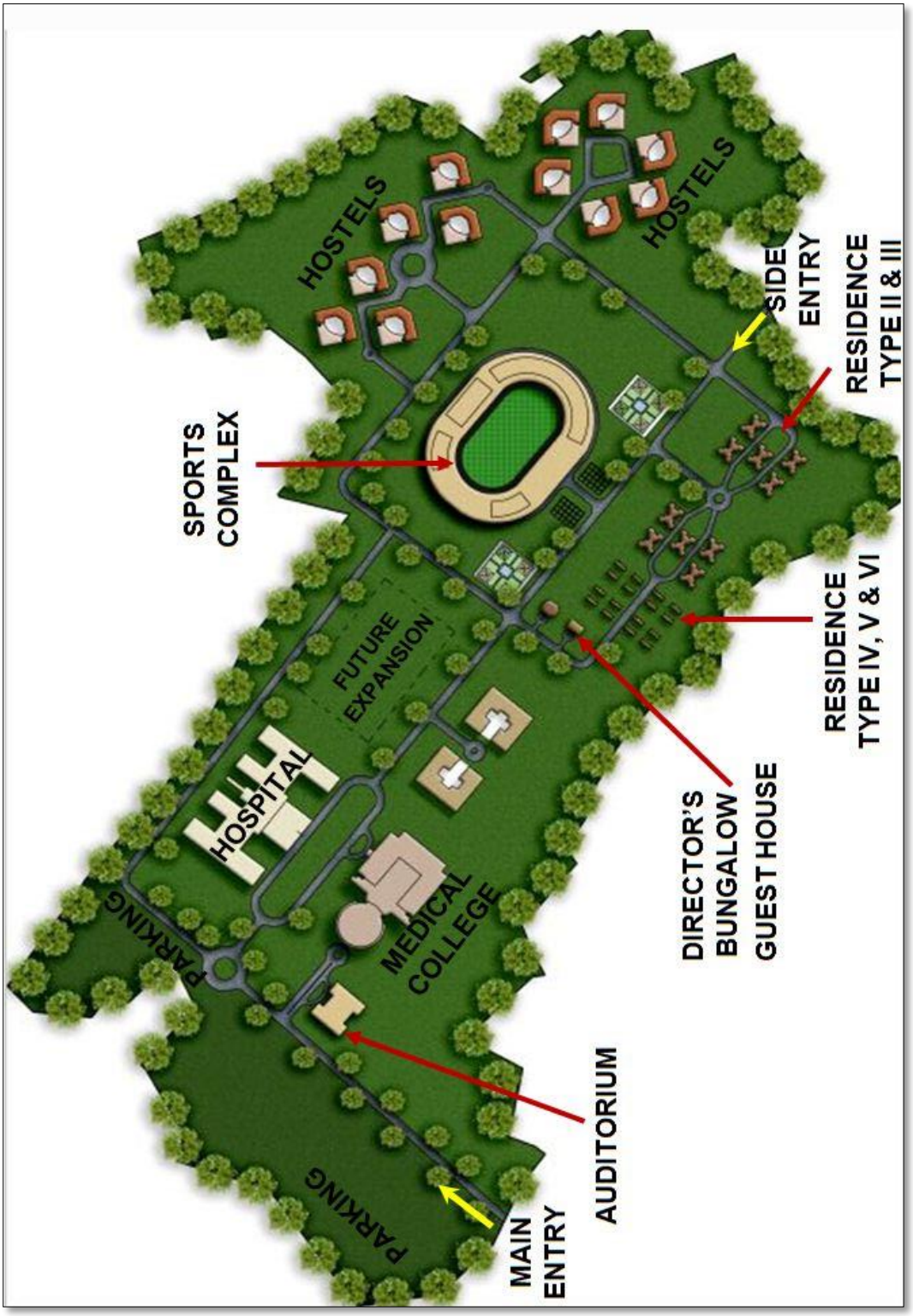
Demographics:-

As of the 2011 India census, Rajkot recorded a total population of 1,390,640. Rajkot city has an average literacy rate of 82.20%, higher than the national average. The population is 52.43% male and 47.47% female. Most of the population is Hindu with a Muslim minority.

SITE PLAN



PROPOSED LAYOUT



2.0 **APPROACH AND METHODOLOGY**

2.0 APPROACH AND METHODOLOGY

HITES comprehends the following tasks (in brief) which needs to be performed for setting up of AIIMS like apex Institution at Rajkot:-

a. Evaluation and analysis of site and surroundings through Site survey, soil investigations etc.
b. Preparing concept & master plan including typical layout plans as per user requirements & preliminary cost estimate.
c. Assisting in obtaining Statutory Approvals.
d. Preparing preliminary /detailed project report.
e. Preparing detailed engineering drawings, BOQ, technical specifications, detailed cost estimates taking consideration of Green Building concepts and usages of environmentally sustainable materials
f. Preparing tender document, assisting in floating tender & entire bid process management for appointment of Works Contractor.
g. Monitoring & supervision of the construction process as per timeline schedule with emphasis on quality, safety & environmental guidelines.
h. Supply, Installation, Testing & commissioning of equipment, machinery, furniture etc.
i. Reviewing bills submitted by the Works Contractor and certification of the same for payment.
j. Assess the completeness of the works by the Works Contractor and certify completion of the construction project including handing over of Facility.
k. Approval / accreditation from GRIHA Rating (3 star or above) and other requisite statutory authorities.
l. Maintenance of buildings after completion of construction work during defect liability period.

HITES assure that the aforementioned tasks (not limiting to above) will be delivered with utmost professionalism with special emphasis on sound Project Management practices.

3.0 FACILITIES

3.1 PROPOSED FACILITIES

3.2 BED DISTRIBUTION

3.3 AREA STATEMENT

3.1 PROPOSED FACILITIES – AIIMS RAJKOT

HOSPITAL		No. of Floors
1.	Hospital Building – 720 Beds	(B+G+5)
2.	Ayush Block – 30 Beds	
INSTITUTIONAL		
1.	Teaching Block- 100seat Medical College + 60seat Nursing college +Admin	(G+5)
2.	Auditorium (500 seater + conference halls of 150 & 100 seater)	(G+1)
3.	Animal House	(GF)
4.	Service Block	
RESIDENTIAL		
1.	Night Shelter (250 persons)	(G+3)
2.	Guest House (14 rooms)	(G+2)
3.	Director's Bungalow	(G+1)
4.	Type-VI (6 block – 1 unit)	(G+1)
5.	Type-V (1 block – 24 units)	(G+5)
6.	Type-IV (1 block – 21 units)	(G+5)
7.	Type-III (1 block – 18 units)	(G+2)
8.	Type-II (3 block – 36 units)	(G+5)
9.	PG Hostel – 312 capacity	(G+5)
10.	Dining Hall 955 capacity	(G+2)
11.	UG Hostel- Girls (240 students)	(G+5)
12.	UG Hostel- Boys (240 students)	(G+5)
13.	Working Nurses Hostel (150 nos)	(G+7)
14.	Nursing Student Hostel (288 nos)	(G+7)
15.	Shopping Complex & Restaurant	(GF)

3.2 BED DISTRIBUTION (Department-wise), AIIMS RAJKOT

DEPARTMENTS	BEDS
SPECIALITY DEPARTMENTS:	
Surgical & Allied Specialities	**120**
• General Surgery	60
• Orthopaedics	30
• Ophthalmology	15
• Oto-rhinolaryngology	15
Medicine & Allied Specialities	**165**
• General Medicine	60
• Paediatrics	60
• TB & Respiratory Diseases	-
• Dermatology	15
• Psychiatry	30
Obstetrics & Gynaecology	**75**
• Obstetrics	30
• Gynaecology	30
• NICU	15
Sub-total	**360**
SUPER SPECIALITY DEPARTMENTS:	
• Cardiology	15
• Cardio-thoracic Vascular Surgery (CTVS)	15
• Gastroenterology	15
• Surgical Gastroenterology	15
• Nephrology	15
• Urology	15
• Neurology	15
• Neuro-surgery	15
• Paediatric Surgery	15
• Burns & Plastic Surgery	15
• Medical oncology	10
• Surgical Oncology	10
• Radiation Oncology	15
• Endocrinology	10
• Pulmonary Medicine	20
Sub-total	**215**
Total Ward	**575**
Other Facilities	**175**
• Intensive Care Unit (ICUs) & Critical Care	75
• Trauma	30
• AYUSH Facilities	30
• PMR Department	10
• Paid Beds	30
TOTAL	**750**

3.3 AREA STATEMENT, AIIMS RAJKOT

S.No	Buildings	Area in Sqm
1.	Hospital Building – 720 Beds	71,000.00
2.	Ayush – 30 Beds	
3.	Teaching Block (100 seat Medical College + 60 seat Nursing college + Admin)	22,500.00
4.	Auditorium (500 seater + Conference halls of 150 & 100 seater)	2,500.00
5.	Animal House	3,000.00
6.	Service Block	
7.	Night Shelter (250 persons)	3,700.00
8.	Guest House (14 rooms)	650.00
9.	Director's Bungalow	380.00
10.	Type-VI (6 block – 1 units)	1,620.00
11.	Type-V (1 block – 24 units)	4,920.00
12.	Type-IV (1 block – 21 units)	3,150.00
13.	Type-III (1 block – 18 units)	1,440.00
14.	Type-II (3 block – 36 units)	7,560.00
15.	PG Hostel – D1 type (1 block - 312 capacity)	7,400.00
16.	Dining Block	1,730.00
17.	UG Hostel- Girls (1 block - 240 students)	5,750.00
18.	UG Hostel- Boys (1 block - 240 students)	5,750.00
19.	Working Nurses Hostel (for 150 nurses)	4,000.00
20.	Nursing Student Hostel (for 288 students)	4,500.00
21.	Convenient Shopping Complex & Restaurant	250.00
	Total	1,51,800.00

Note: Future car parking (b+g+3) for 600 cars = 21000 sq.m.

4.0 **PROJECT COST SUMMARY**

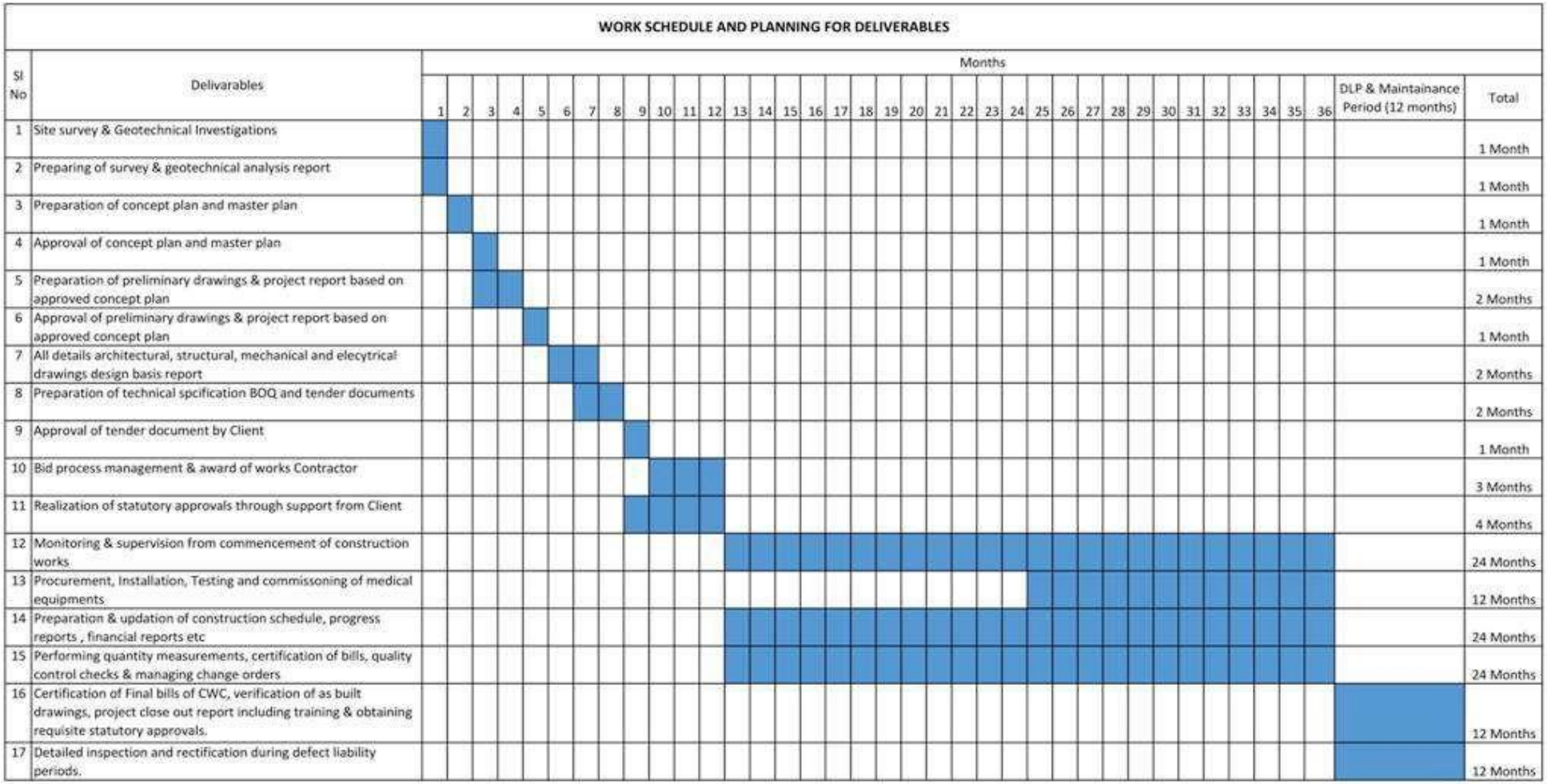
PRELIMINARY COST ESTIMATES – AIIMS RAJKOT

	PROPOSED AIIMS LIKE APEX INSTITUTION AT RAJKOT, GUJARAT		
Sl. No	**Description**	**Built up area in sqm**	**Amount in Rs.**
A. SUMMARY OF COST BUILDING & SERVICES			
(i)	***Buildings***		
1	Hospital Building (750 beds)	71,000	2,850,222,241
2	Teaching Block (100 MBBS Students + 60 Nursing Students) + Admn. Block	22,500	861,261,240
3	Auditorium (500 Seater)	2,500	98,848,400
4	Animal House + service blocks	3,000	85,154,720
5	Night Shelter (250 Persons)	3,700	102,829,160
6	Guest House (14 rooms)	650	18,658,080
7	Director's Bunglow	380	9,396,184
8	Type-6 (6 Block of 1 units each)	1,620	41,871,816
9	Type-5 (1 Block of 24 units each)	4,920	140,337,583
10	Type-4 (1 Blocks of 21 units each)	3,150	91,398,975
11	Type-3 (1 Blocks of 18 units each)	1,440	42,380,352
12	Type-2 (3 Blocks of 36 units each)	7,560	211,810,756
13	PG Hostel-D1 type (1 Block of 312 capacity)	7,400	219,188,010
14	UG Hostel-Girls (For 240 Students)	5,750	171,347,764
15	UG Hostel-Boys (For 240 Students)	5,750	171,347,764
16	Working Nurses Hostel (For 150 Nurses)	4,000	117,032,160
17	Nursing student Hostel (For 288 students)	4,500	126,138,992
18	Convenient Shopping Complex and Restaurant	250	9,324,000
19	Dining Block	1,730	7,972,456
	Sub total (I)	**151,800**	**5,416,520,652**
(ii)	**Services**		
a	External Development		553,449,725
b	HVAC,Sub-Station, LV System etc		1,653,095,744
c	Underground & Overhead water tanks including Fire Tanks		140,280,000
d	STP &ETP		75,000,000
	Sub total (II)		**2,421,825,469**

Sl. No	Description	Built up area in sqm	Amount in Rs.
	Sub total (c) =I+II		**7,838,346,120**
	Contingencies @ 3%		**235,150,384**
	Sub Total A		**8,073,496,504**
	Cost Escalation @6.5% for beyond 2 years		**1,049,554,546**
	Total A		**9,123,051,050**
B. FURNITURE			
	Furniture		**250,000,000**
	SUB TOTAL		**250,000,000**
	Contingencies @ 3%		**7,500,000**
	Total B		**257,500,000**
C. MEDICAL EQUIPMENT			**1,853,200,000**
	Total C		**1,853,200,000**
D. CONSULTANCY FEE			
	Consultancy @5% on (A) i/c 18% GST		**538,260,012**
	Consultancy @2% on (B+C) i/c 18% GST		**49,812,520**
	Total D		**588,072,532**
	Total (A+B+C+D)		**11,821,823,582**
E. STATUTORY APPROVALS			
	Add for statutory approvals including **GRIHA** Fees	**L.S.**	**5,000,000**
	Total E		**5,000,000**
	TOTAL (A+B+C+D+E+F)		**11,826,823,582**
F	**PRE CONSTRUCTION ACTIVITIES**		**150,000,000**
G	**Grand Total (G)**		**11,976,823,582**
	Rs in Cr.		**1,197.68**
	Say Rs in Cr.		**1,198.00**

Note:- 1.The above cost does not contain any factor for GST 2.The provision for residential accommodation for different categories included in the above estimates shall be reviewed during detailing as per actual requirements.	
Note:	
A	These Preliminary cost estimates are prepared based on CPWD PAR rate 2012 with Cost Index as on 1-7-2018 and current prevailing market rates for non-scheduled & furniture items.
B	It may be noted that as per CPWD Office Memorandum DG/PAR/03 dated 14.02.2014, where anticipated time for submission of the preliminary estimates to completion of the work is more than two years, the cost enhancement should be considered @6.5% per annum on effective amount of project cost for the period in excess of two years. This cost has been included in the estimate.
C	**Exclusions :**
	Following items are not included in the preliminary cost estimates:-
1	Maintenance charges for Lab equipment
2	Cost of Consumables and Spares w.r.t HVAC,DG Sets, Lifts, Electrical Substation etc.
3	The cost of Lab equipment
D	**Inclusions :**
1	Office equipment viz. computers, printers, etc. for Rs. 4.Crs. Included
2	Cost estimates includes Rs. 25.75 Crs. towards provision of furniture for first 2 years.
3	Hospital Specific IT Software works like Hospital Management Information System (HMIS), Picture Archival Access System (PACS), Library Management System along with required hardware included for Rs.24.25 Crs.

5.0 IMPLEMENTATION SCHEDULE



1.0	Pre-construction Phase	12 Months
2.0	Construction Phase	24 Months
3.0	Defect Liability Period	12 Months

6.0 USER REQUIREMENT

AIIMS RAJKOT- BLOCK WISE REQUIREMENT

HOSPITALS

Sr. No.	DEPARTMENTS
OPD	
1.	Entrance Lobby
2.	Waiting
3.	Reception
4.	Registration
5.	Record Room
6.	Computer Room
7.	Medical Social Worker
8.	Pharmacy
9.	Telephone Booth
10.	Office
11.	Department Office
12.	Consultants
13.	Housekeeping / Store
14.	Administrative Section
15.	Admission / Discharge
16.	Cashier
17.	Public Utilities

Note: This is indicative of a typical unit and space would have to be provided for all Specialities and Super-Specialities on a sharing basis i.e. a total of 25 Units

Medical Disciplines

General Medicine

1.	Consultant
2.	Examination & Workup
3.	Treatment Room
4.	Nurses Room

5. Demonstration room
6. Waiting area

CASUALTY

1. Entrance Lobby
2. Relative Waiting
3. Doctors Room
4. Stretcher Parking
5. Registration
6. Office
7. Police Post
8. Observation/Treatment Area
9. Male Doctors Rest Room
10. Male Doctors Toilet
11. Female Doctors Rest Room
12. Female Doctors Toilet
13. ICU
14. Nursing Station
15. Clean Utility
16. Dirty Utility
17. X-ray
18. CT Scan
19. Plaster Room
20. OT
21. Change Room
22. Preparation
23. Scrub
24. Resuscitation Beds
25. Emergency Beds
26. Nurses' Station
27. Ultra Sound Room
28. Emergency Lab

DIAGNOSTIC

1. Waiting
2. Record Room
3. MMR
4. Reception
5. Reporting Room
6. Doctors Room
7. Lift Lobby
8. Toilets
9. MRI
10. Waiting
11. X-ray 2 Nos
12. Console
13. Change Room
14. Dark Room & Auto Processor
15. Light Lock
16. Ultra Sound
17. Change Room
18. CT Scan
19. Console

LABORATORIES

1. Laboratory
2. Cytopathic Lab
3. Metabolic Lab
4. Radio isotope Lab
5. Waiting
6. Cardiology ICUs
7. Change Room For Nurses
8. Dirty Utility
9. Clean Utility
10. Waiting

11. Urine/Stool Collection
12. Record
13. Path
14. Laboratory
15. Store
16. Reception
17. TMT Holter
18. Cardiologist
19. Record Room
20. Echo
21. Cath Lab
22. Console
23. Store
24. Change Room
25. Scrub
26. ECG
27. Lift Lobby
28. AHU
29. Waiting Areas
30. Public Utilities for Doctors, Nurses Staff, Patients

ICU & DIALYSIS

1. Reception
2. Change Room
3. ICU
4. Staff/Support Rooms
5. Urology/Uro Dynamics System
6. Staff Support Room
7. Reception
8. Change Room
9. Tech. Room
10. Doctors Room

11. Toilets
12. Dialysis Units
13. Duty Room
14. Nursing Station
15. R.O.Plant & Dialyzer Reuse
16. Kidney Washer
17. Electrical Room
18. AHU

OT COMPLEX

1. Operation Theatre - 16 Nos.
2. Air Lock
3. Doctors Lounge
4. Anaesthesia Room
5. Change Room
6. Store
7. Staff Support Room
8. Entrance Lobby
9. Pre-operative
10. Post-Operative
11. Sterile Corridor
12. Scrub Station
13. Preparation
14. Disposable Corridor
15. H.S.Steriliser
16. Lift Lobby
17. AHUs
18. Electrical Room
19. Portable X-ray room
20. Space for Frozen Section
21. Anaesthetist's Room
22. Trolley Park

23. Matrons Room
24. Patients Relatives Waiting Space with Toilets
25. Snack Bar

WARDS (Typical)

1. Discussion Room
2. Isolation
3. Nursing Station
4. Clean Utility
5. Dirty Utility
6. Nurses Rest Room
7. Doctors Room
8. Class IV Room
9. Pantry
10. Toilet
11. Nursing Areas (Bed Area)
12. Electrical Room
13. AHU

TEACHING COMPONENT OF WARD

1. Prof. Room
2. Associate Prof.
3. Assistant Prof.
4. Sr. Resident
5. Jr. Resident
6. Clerk Room
7. Seminar Room
8. Library
9. Teaching Room

MATERNITY

1. Lobby
2. Labour Room
3. Toilet
4. Eclampsia
5. Nursing Station
6. Dirty Utility
7. Clean Utility
8. Nursery
9. Feeding Room
10. Ultra Sound
11. OT
12. Sterilization
13. Delivery Suites
14. Post-Operative
15. Doctors Change Room
16. Nurses Change Room
17. Toilets
18. AHU
19. Electrical Room

PAYING WARDS

1. Reception & Waiting Area
2. Toilet
3. Doctors Room
4. Nurses Room
5. Pantry
6. Nursing Station
7. Dirty Utility
8. Clean Utility
9. Nursing Rooms(Bed Area) with Attached Toilet

10. Electrical Room
11. AHU

BLOOD BANK

1. Waiting
2. Reception
3. Record Room
4. Store
5. Laboratory
6. Bleeding
7. Recovery
8. Doctors Room
9. Staff Room
10. Elisa
11. Cold Storage
12. Washing/Sterilization
13. Pantry
14. Electrical Room
15. AHU

SERVICES

CSSD

1. Decontamination Room
2. Soiled store
3. Inspection, Wrap & Pack Area
4. Sterile store
5. Sterile Despatch
6. Office for Supervisor
7. ETO Room
8. Linen pack
9. Steam steriliser

10. Equipment Wash
11. Change Room
12. Toilet

KITCHEN

1. Unloading Platform
2. Changing Room
3. Dietician
4. Dish Wash
5. Pantry
6. Dry Store
7. Manager
8. Meat Prep Area
9. Veg Prep Area
10. Toilet
11. Special Diet Room
12. Cold Store/ Veg.Store
13. Large Utensil Washing Area
14. Trolley Bay
15. Trolley Washing Area

LAUNDRY

1. Lobby
2. Distribution Area
3. Clean Linen Store
4. Laundry
5. Receiving
6. Sewing Room
7. Sterilization
8. Ladies Change Room
9. Gents Change Room
10. Ladies Toilet
11. Gents Toilet

12. Manager
13. Store

MEDICAL GAS (MANIFOLD ROOM)

1. Supervisor Room
2. Cylinder Bank Room
3. Equipment Room (Reservoir, Compressor, Alarm etc.)
4. Toilets
5. Cylinder Storage Room
6. Liquid Oxygen Tank/Oxygen Concentrator Area

MORTUARY

1. Lobby
2. Entrance Verandah
3. Mortuary
4. Dead body Storage
5. Post Martum
6. Prayer
7. Washing
8. Staff
9. Electrical
10. AHU

ANIMAL HOUSE

1. Animal Rooms
2. Laboratory
3. Operation
4. Office
5. Conference

PURCHASE, STORES & MAINTENANCE

1. Purchase & Store Manager

2. Maintenance Manager
3. Bio-Medical Engg. Office
4. House Keeping Office
5. Bulk Storage
6. Despatch
7. Maintenance Workshop

MEDICAL WASTE MANAGEMENT

PUBLIC AREAS

DOCTORS CANTEEN

1. Doctors Canteen
2. Kitchen
3. Male Change
4. Ladies Toilet
5. Gents Toilet

PUBLIC CANTEEN

1. Public Canteen
2. Kitchen
3. Male Change
4. Ladies Toilet
5. Gents Toilet

OTHER SERVICES:-

1. ESS
2. AC plant room
3. Underground water tank and pump station etc.
4. STP
5. Rain water harvesting
6. Waste management
7. Central drug store

TEACHING BLOCK FACILITIES:-
BASIC SCIENCE BLOCK

DEPARTMENT OF ANATOMY

1. Lecture Halls
2. Demo Rooms
3. Dissection Rooms
4. Embalming Room
5. Storage Tank (3 nos.)
6. Cold Storage
7. Histology
8. Prep.Room
9. Research Labs
10. Museum
11. Dept. Library
12. Prep. And Specimen Room
13. Formalin Tanks –Cadaver
14. Micro Anatomy lab
15. Tech.and Prep.Room

Accommodation for Staff

1. HOD/Prof.
2. Asso. Prof. / Reader
3. Asst. Prof./ Lecturer (for 3)
4. Tutor/Demos
5. Dept. Office / Clerical Room
6. Working Acco. for Non-Teaching Staff
7. Sr.Resident (4)
8. Jr. Resident (4)
9. Research Lab for Faculty (3)

** Four Lecture Hall 120 Students x 3 + 250 Students x 1 (These lecture theatres are to be shared by various departments.)

DEPARTMENT OF PHYSIOLOGY INCLUDING
BIO-PHYSICS

1. Lecture Halls
2. Demo Rooms

Practical Rooms

3. Amphibian Labs
4. Prep.Rooms
5. Mammalian Labs
6. Prep.Rooms

Human Labs

1. Haematology
2. Prep.Rooms
3. Clinical Physiology Labs
4. Dept. Library
5. Research Labs

Accommodation for Staff

1. HOD/Prof.
2. Asso.Prof./Reader
3. Asst.Prof./Lectures (for 3)
4. Tutor/Demos
5. Dept.Office/Clerical Room
6. Working Acco.ForNon-Teaching Staff
7. Sr. Resident (4)
8. Jr. Resident (4)
9. Research Lab (2)

** Four Lecture Hall 120 Students x 3 + 250 Students x 1
These lecture theatres are to be shared by various departments.

DEPARTMENT OF BIO CHEMISTRY

1. Lecture Halls
2. Demo Rooms

Practical Class Rooms

1. Ante Rooms
2. Dept. Library
3. Research Labs
4. Experimental Lab/Micro
5. Clinical Bio Chemistry Lab
6. Technicians Room

Accommodation for Staff

1. HOD/Prof.
2. Asso.Prof./Reader
3. Asst.Prof./Lectures(for 3)
4. Tutor/Demos
5. Dept.Office/Clerical Room
6. Working Acco.For Non-Teaching Staff
7. Sr Resident/ Jr Resident (4 each)

** Four Lecture Hall 120 Students x 3 + 250 Students x 1
These lecture theatres are to be shared by various departments.

DEPARTMENT OF PATHOLOGY

1. Lecture Halls
2. Demo Rooms
3. Practical Labs
4. Morbid Anatomy &Histopa./Cytopa.
5. Clinical Pathology/Haematology
6. Preparation Rooms

Service Lab

1. Histopathology
2. Cytopathology

3. Haematology
4. Special Lab for specialized work
5. Balance Room
6. Store Room
7. Special Room for High S. Centrifuge
8. Wash Room
9. Museum
10. Autopsy Block
11. Dept. Library
12. Research Lab
13. Surgical Pathology Lab
14. Section Cutting Lab
15. Grossing & Photography
16. Washing & Sterilization

Accommodation for Staff

1. HOD/Prof.
2. Asso.Prof./Reader
3. Asst.Prof./Lectures(for 3)
4. Tutor/Demos
5. Dept.Office/Clerical Room
6. Working Acco.For Non-Teaching Staff
7. Blood Bank
8. Sr. Resident/Jr. Resident (4 each)

** Four Lecture Hall 120 Students x 3 + 250 Students x 1
These lecture theatres are to be shared by various departments.

DEPARTMENT OF MICRO-BIOLOGY

1. Lecture Halls
2. Demo Rooms
3. Practical Labs
4. Microscopy & Burners
5. Preparation Rooms

6. Service Labs

Bacteriology

1. Media Preparation &Storage
2. Autoclaving
3. Washing/Drying Area

Serology

1. Media Preparation &Storage
2. Autoclaving
3. Washing/Drying Area

Virology

1. Media Preparation &Storage
2. Autoclaving
3. Washing/Drying Area

Parasitology

1. Media Preparation &Storage
2. Autoclaving
3. Washing/Drying Area

Mycology

1. Media Preparation &Storage
2. Autoclaving
3. Washing/Drying Area

Tuberculosis

1. Media Preparation &Storage
2. Autoclaving
3. Washing/Drying Area

Immunology

1. Media Preparation &Storage
2. Autoclaving
3. Washing/Drying Area
4. Museum
5. Dept. Library
6. Research Labs
7. Room for preparation of vaccines, Sera, Medical for Culture
8. Specimen Collection Lab
9. Animal Room for Pathology & Microbiology

Accommodation for Staff

1. HOD/Prof.
2. Asso.Prof./Reader
3. Asst.Prof./Lectures
4. Tutor/Demos
5. Dept.Office/Clerical Room
6. Working Acco.For Non-Teaching Staff
7. Sr. Resident/Jr. Resident (4 each)

** Four Lecture Hall 120 Students x 3 + 250 Students x 1
These lecture theatres are to be shared by various departments.

DEPARTMENT OF PHARMACOLOGY

1. Lecture Halls
2. Demo Rooms

Practical Class Rooms

1. Experimental Pharmacology
2. Ante Room
3. Clinical Pharmacology
4. Ante Room

Museum

1. Dept. Library
2. Research Labs

Accommodation for Staff

1. HOD/Prof.
2. Asso.Prof./Reader
3. Asst.Prof./Lectures
4. Tutor/Demos
5. Dept.Office/Clerical Room
6. Working Acco.For Non-Teaching Staff

** Four Lecture Hall 120 Students x 3 + 250 Students x 1
These lecture theatres are to be shared by various departments

DEPARTMENT OF FORENSIC MEDICINE

1. Lecture Halls
2. Demo Rooms
3. Museum
4. Laboratory
5. Autopsy Block
6. Dept. Library
7. Research Labs

Accommodation for Staff

1. HOD/Prof.
2. Asso.Prof./Reader
3. Asst.Prof./Lectures
4. Tutor/Demos
5. Dept.Office/Clerical Room
6. Working Acco.For Non-Teaching Staff

** Four Lecture Hall 120 Students x 3 + 250 Students x 1
These lecture theatres are to be shared by various departments.

DEPARTMENT OF COMMUNITY MEDICINE

1. Lecture Halls
2. Demo Rooms
3. Laboratory
4. Museum
5. Dept. Library
6. Research Labs
7. AV Room
8. Studio
9. Exhibition Hall

ACCOMMODATION FOR STAFF

1. HOD/Prof.
2. Asso.Prof./Reader
3. Asst. Prof. / Lecturer
4. Sr. Residents/Jr. Residents (4 each)
5. Statistician Cum Lecturer
6. Epidemiologist Cum Lecturer
7. Tutor/Demos
8. Dept.Office/Clerical Room
9. Working Accommodation for Non-Teaching Staff

** Four Lecture Hall 120 Students x 3 + 250 Students x 1
These lecture theatres are to be shared by various departments.

7.0 STRUCTURAL CONCEPT

DESIGN OF STRUCTURES LOADS & ITS COMBINATION ANALYSIS

7.1 Design of Structures

SECTION-1

7.1.0 Objective

The objective of this report is to lay down the structural analysis & design of proposed AIIMS at Rajkot.

7.1.1 Scope

The present report incorporates the design process to establish the overall design philosophy to be adopted in the Analysis and design.

7.1.2 Structural Arrangement

The proposed buildings is considered to be of RCC frame structure with Raft foundations. The external walls are proposed to be constructed with 230 mm thick burnt brick masonry.

7.1.3 Design Standards

The relevant Indian Standard Codes, as given below have been followed for structural design.

Sl. No.	Code	Description
1	IS: 875(Part 1)-1987	Code of practice for Design Loads (Other than Earthquake) for Building and Structures-Unit weights of Buildings Materials and Stored Materials.
2	IS: 875(Part 2) - 1987	Code or Practice for Design Load (Other than Earthquake) for Buildings and Structures Imposed Loads.
3	IS: 875(Part 3) - 1987	Code of Practice for Design Loads (Other than Earthquake) for Buildings and Structures – Wind Load.
4	IS: 875 (Part 5) - 1987	Code of Practice for Design Loads (other than Earthquake) for Buildings and Structures-Special Loads and Load combinations.
5	IS: 456 -2000	Code of Practice for Plain and Reinforced Concrete
6	IS: 1786 -2008	Specification for High Strength Deformed steel bars and Wires for Concrete Reinforcement.
7	IS: 3370 (Part1) - 1965	Code or practice for Concrete Structures for the storage of Liquids – General Requirements.
8	IS: 3370 (Part2) - 1965	Code of Practice for Concrete Structures for the Storage of Liquids – Reinforced Concrete Structures.
9	IS: 3370 (Part4) - 1967	Code of practice for Concrete Structures for the Storage of Liquids – Design Tables.
10	IS: 1893 (Part1) – 2016	Criteria for Earthquake Resistance Design of Structures.
11	IS: 4326-1993	Earthquake Resistance Design and Construction of Building – Code of Practice.
12	IS: 1642-1989	Fire safety of buildings (general):details of construction code Of practice

Sl. No.	Code	Description
13	IS: 13920-1993	Ductile detailing of reinforced Concrete structures subjected to Seismic forces — code of practice
14	SP:24-1983	Explanatory handbook on Indian standard code of practice for Plain and reinforced concrete (IS:456-1978)
15	SP:16-1980	Design aids for Reinforced concrete to IS : 456-l978
16	SP:34-1987	Handbook on Concrete Reinforcement and Detailing

SECTION-2

2. Loads, Classification and Material Properties

2.1 Loads

The structural members are loaded with various loads combinations during its services conditions. The loads on the structure are taken for analysis and design as per the relevant IS codes of practice

a) Dead load as per IS: 875 -1987 Part-1

b) Imposed live load as per IS: 875 -1987 Part-2

c) Wind loads as per IS: 875-1987

d) Seismic Loads as per IS: 1893-2016

Dead loads comprises of the self-weight of all permanent construction including walls, slabs, beams, columns, water proofing treatment, water tanks, stair case, floor finish etc. The structure would be designed for earthquake resistance as per IS 1893:2016,with due consideration for the structural detailing as per provisions of IS 13920-1993 and SP 34-1987. The building is given an importance factor of 1.5

A. Dead Loads (DL) (Ref:- IS:875 (part-1)-1987)

1.	Self-weight of reinforced concrete	: 25KN/m³
2.	Self-weight of plain concrete	: 24KN/m³
3.	Brick Masonry wall	: 18.85KN /m³
4.	Ceiling plaster (12mm thick)	:0.25 KN/m³
5.	Waterproofing (keeping future expansion in mind, Average 200 mm Thick brick bat coba is proposed)	:9.90 KN/m³
6.	Cement plaster	: 20.40KN /m³
7.	Water in overhead water tank	: 10KN/m³
8.	Granite (average)	:26.70 KN/m³
9.	Marble /Sand stone	: 24.00KN /m³
10.	Vitrified tiles (considering density as 2.4 gm/cc)	: 24.00KN/m3

B. Live loads (LL) (Ref:- IS: 875 (part-2)-1987)

1.	Kitchen and laboratory	:3.0KN/m²
2.	Dinning and cafeterias	: 3.0 KN/m²
3.	Toilet and bath rooms	: 2.0KN/m²
4.	Office rooms	: 2.5KN/m²
5.	Staircase Corridors & balconies	: 4.0KN/m²
6.	Accessible roofs	: 1.5KN/m²
7.	Chajja (inaccessible roof)	: 0.75KN/m²

C. Wind loads (WL)(Ref:- IS:875 (part-3)-1987)-Typical)

Basic wind speed (V_b)		:47m/sec
Designs life of the structure		: 100 years
Risk coefficient (k1)(table-1)		:1.07
Terrain category		: 1
Class of structure		: B
Maximum height of the structure from ground		: 30 m
Structure size factor k2 (table-2)	30m	: 1.13
Topography factor (k3)		:1.0
Design wind velocity (Vz) =Vb.k.1.k2.k3		
	30m	: 56.82 m/sec
	50m	: 60.38 m/sec
Design wind pressure (pz)=0.6 Vz²		
	30m	: 1.937KN/ m²
	50m	: 2.1857KN/ m²

Note: Software STAAD pro would be made use of for the application of above said loads on the said structure.

D. SEISMIC LOAD PARAMETERS - (Ref:- IS :1893 (part-1)2016)

Location of proposal site lies in Zone II.

The design parameters will be followed accordingly.

2.2 Max. Allowable Deflection – (Including the effect of temperature, creep and shrinkage)

(i)	Concrete	-	Span / 250	(for gravity load) Floors
(ii)	Steel / composite	-	Span / 325	(for gravity load) Floors
	For (i) & (ii)	-	Height / 500	(for lateral load)

2.3 LOAD COMBINATION

The following are the proposed Load combinations for designing with partial safety factors as per IS 456:2000 cl 36.4.1 (Table 18)

Load Combination	Limit State of Collapse			Limit State of Serviceability		
	DL	LL	WL/EL	DL	LL	WL/EL
DL+LL	1.5	1.5	_	1.0	1.0	_
DL+WL	1.5 or 0.9	_	1.5	1.0	_	1.0
DL+LL+WL	1.2	1.2	1.2	1	0.8	0.8
DL+EL	1.5 or 0.9(1)	_	1.5	1	_	1
DL+LL+EL	1.2	1.2	1.2	1	0.8	0.8

(1) This value is to be considered when stability against overturning or stress reversal is critical.

Wind Load and Earthquake Load both are considered for both x and y directions.
The maximum load of the above two is considered for design

2.4 Hazard Classification

a) Fire :The structure is designed for 2 hr fire rating ,as the firefighting system and fire hydrants are available within the building .the minimum clear over to reinforcement and minimum dimensions of RC structural members as per clause 21.2 of IS:456-2000 shall be as follows considering 2 Hr fire rating.

Sl.No.	Structural member	Minimum dimension	Minimum clear cover
1	Column fully exposure to fire	300 mm	40 mm
2	Beams (continuous)	200 mm	30mm
3	Floors (continuous)	125 mm	25 mm
4	RCC walls	160 mm	25 mm

b) Earthquake: as explained earlier the building will be designed for the earthquake force in accordance with IS: 1893-2016

2.5 Material Properties

Concrete: as per Table 5 of IS 456-2000 keeping in view loads the proximity of the Structure, Minimum grade of concrete proposed is M25 Exposure condition is moderate. Maximum size of coarse aggregate is 20 mm .Maximum w/c ratio is 0.5.Minimum cement concrete is 410 kg/m3.Type of cement is either OPC or PPC. M30 grade of concrete shall be provided for water retaining structures.

Reinforcement: Reinforcement steel is TMT bars of grade Fe-500 Conforming to IS: 1786-2008

2.6 Cover to Reinforcement

From durability consideration, exposure condition is assumed to be Moderate. The clear cover to main reinforcement to be considered in the design satisfying durability &2 hrs. Fire rating requirement is as follows (clause No.26.4.2,Clauses 21.4-,26.4.3 and Fig 1 of IS 456- 2000

A	FOOTING	50MM
B	COLUMNS	40MM
C	FLOOR/ROOF BEAMS	30MM
D	FLOOR /ROOF SLAB	25MM
E	LINTEL BEAMS,CHAJJA&LOFT	15MM
F	STAIRCASE WAIST SLAB & LANDING	25MM
G	PLINTH BEAM	40MM
H	WALLS	25MM

SECTION-3

COMPUTATION METHODS – MODELLING, ANALYSIS, DESIGN & DETAILING

3. Modelling

The structure is idealized as a 3-D space frame model using the software packages STAAD pro. The masonry wall is used as filler wall and not cast monolithically with structure. Hence this is not modelled in the analysis. In this packages slab loads are applied as a floor loads. Wall loads are applied as UDL on beams. Self – weight is added in the software to have member loads.

The analysis of the proposed structure would be carried to

- Analyze to ensure elastic behaviour and fulfilment of serviceability criteria for unfactored load combination.
- Analyze to ensure adequate structural integrity for factored load combinations
- Obtain static displacements and rotations at various nodes.
- Obtain resultant member forces like bending moments, shear forces and axial forces.
- Support reactions (axial force and moment) coming on foundations.

3.1 Control of Deflection (Vertical)

The deflections of a structure or part thereof shall not adversely affect the appearance or efficiency of the structure or finishes or partitions. The deflections shall generally be limited to the following (clause 23.2 of IS 456-2000):

a) The final deflections due to all loads including heat effects of temperature, creep and shrinkage and measured from the as-cast level of the supports of floors, and all other horizontal members, should not normally exceed span/250.
b) The deflection including the effects of temperature, creep and shrinkage occurring after erection of partitions and applications of finishes should not normally exceed span/350 or 20 mm whichever is less .When deflections are required to be calculated, the method given in Appendix – B of IS: 456-2000 will be used.

3.2 Design Philosophy

To meet the design life and durability requirements, codal provisions specified in clause 8.0 and table 5 of IS: 456- 2000 will be followed for reinforced Concrete Elements. All structural elements would be designed according to the Limit State Method as specified in IS: 456: 2000. M 25 grade concrete for beams, slabs footings, staircase, lift walls and M30 grade concrete for columns with Fe 500 Grade steel are considered for design.

1. DESIGN OF FLOOR / ROOF SLAB

All floor/roof slabs be designed in accordance with Annex- D of IS: 456-2000 with corners held down. Cranking of reinforcement at the support will be provided. Torsion reinforcement will be provided at corners of the slab as per clause D-1.8 of Annex-D of IS: 456-2000.

2. DESIGN OF FLOOR / ROOF BEAM

The beams shall be designed for the envelopes of maximum bending moment and shear force for the load combination that gives the maximum stresses using the STAAD Pro2006 software as per the requirements of IS 456-2000. The critical members would be check manually also. Main reinforcement will not be bent – up and hence shear reinforcement shall be in the form vertical stirrups only.

3. DESIGN OF COLUMNS:

The columns shall be designed for vertical load (reduced in accordance with clause 3.2 of IS: 875 (part-2-1989) and uniaxial or biaxial bending depending on its location. Effective length of the column will be in accordance with Annex- E of IS: 456:-2000, considering fixed end on both ends. Minimum diameter of longitudinal steel is 12mm and that for ties is 8mm. The columns shall be designed for the envelopes of maximum value as per STAAD Pro .The critical members would be check manually also.

4. DESIGN OF FOOTINGS

Assume 10% of the vertical load from the column as the self-weight of the footing a preliminary step for the design. The same shall be checked after designing the footing dimensions. The plan size of the footing will be determined on the basis of the SBC of the soil. The design pressure at the base of the footing shall be determined by algebraic addition of the pressure due to vertical load and that the due to moment at the base of the column.

The design pressure shall be less than SBC of soil except when seismic load are considered, Where SBC can be increased as per IS: 1893-2016

Base pressure = (P/A)+/-( ) +/- (My/Zy)
Where P = Vertical load on the footing
A = Plan area of the footing
Mx and My = Bending moment at the base of the column along the X and Y directions

Zx and Zy = Sectional modules of the footing along the X and Y directions = $ab^2/6$ or $ba^2/6$

a& b are the dimensions of the footing

The footing shall be designed in accordance with clause 34 of IS:456-2000. The footing will be checked for the following:

a) Bending moment at a section on the face of the column /pedestal

b) Shear force at a section at a distance equal to effective depth of the footing from the face of the column or pedestal.

c) Bearing stress on the footing due vertical load of the column.

d) Punching shear on the footing due to vertical load of the column.

The reinforcement will be determined as a rectangular section in accordance with Annex-G of IS:456-2000 and SP-16.

5. DESIGN OF LINTEL BEAMS, CHAJJA & LOFT

The lintel beams will be designed for:

a) Weight of brick masonry above the lintel level

b) Load from RC Chajja attached to the lintel.

c) Torsion moment due to eccentricity of the Chajja/loft.

Lintel beam shall have a minimum bearing equal to the thickness of the wall on which it is supported or the depth of the lintel beam, whichever is greater. It shall be designed as a simply supported rectangular section. Chajja/loft will be designed as a cantilever slab.

6. DESIGN OF STAIRCASE

The Internal staircase shall be designed in accordance with clause 33 of IS: 456-2000. The Staircase is slab type without stringer beam. The waist slab shall be designed as a simply supported rectangular section. The size of main reinforcement steel shall not be less than 12mm. The staircase would be analyzed, designed & detailed as per the provisions of SP- 34.

7. UNDERGROUND SUMP COMBINED WITH WTP/OVERHEAD WATERTANK

Underground water tank would be designed to sustain the following two cases-

i. Tank full and No earth fill

ii. Tank empty and active earth pressure acting from outside.

The walls and base slab would be designed as per the provisions of IS: 3370 (Part1-Part4) -1965 using the working stress method.

Overhead water tank would be designed to sustain the water load at full tank condition as per the provisions of IS: 3370 (Part 1- Part4) -1965 using the working stress method.

4. Detailing

The reinforcement layout should take into account the strength requirements as well as the economy of construction.
Following are the requirements of good detailing.

- Reinforcement detailing should be simple for fabrication and placing.
- Cracking of concrete should be within the permissible limits
- There should not be any free paths for propagation of cracks without being traversed by reinforcement
- Joints and discontinuities should be capable of withstanding the same forces as the adjoining sections
- Reinforcement should not deviate excessively from the direction of tensile stresses
- Reinforcement steel of same type and grade shall be used as main reinforcement in a structural member.
- Provisions of IS: 456-2000, IS 13920-1993 and IS: SP 34 will be followed for the purpose of detailing of reinforcement.

8.0 PLUMBING& SANITARY INSTALLATIONS

Plumbing& Sanitary Installations

8.1 Introduction

The project consists of many buildings like Hospitals, Colleges, Residential blocks & other allied buildings for services with dedicated Plumbing and fire protection water tanks, pumping system, water treatment provisions and Effluent treatment plant shall be located in the building/ proposed site.

8.2 Detailed scope of work

(a) Internal Plumbing Works

- Sanitary Fixtures & C.P Brass Fittings.
- Soil, waste and Rain water pipes.
- Internal Water Supply System.
- Hot Water Supply System.
- Disposal of Soil, waste and Rain water pipes to 1st Manhole.

(b) External Water Supply System

- The external water supply shall be provided from the nearby Melur Combined Water Supply Scheme by the TWAD board.
- The water so received shall be treated to make it fit for human consumption & hospital needs.
- Providing water supply distribution network system of the campus.
- Storage of Water.
- Distribution System.

(c) Sewerage System

- The sewer generated from the buildings shall be fed into the sewerage network of the campus.
- Disposal of effluent through Effluent treatment plant to the sewer line.

(d) Storm Water Drainage System

- Collection and Conveyance around the proposed buildings.
- Disposal of storm water to existing external Storm Water line.

(e) Water Supply & Drainage Pump Works

- Water supply pumps for domestic & flushing water supply.
- Drainage pumps for basement & plant room drainage.

(f) Fire Fighting System

- Static water storage tanks and Fire Pumps.
- Wet Riser System.
- Fire Hydrant System.
- Sprinkler System.
- Portable Fire extinguishers.

8.3 Approaches for planning

8.3.1 Considering the nature of activities to be conducted and the type of buildings to be developed, our efforts in the approach for the planning of various systems, shall include the following considerations:

- There shall be enough safe, clean and potable domestic water on a continuous basis to every user in all the buildings.
- Efficient disposal from toilets/Wet areas.
- Quick disposal of rainwater without flooding.
- Reliable firefighting system.

8.4 Internal Plumbing Systems

8.4.1 Sanitary Fixtures & C.P Brass Fittings

8.4.1.1 Sanitary Fixtures and C.P. fittings shall be as per GRIHA requirement.

8.4.1.2 Urinals shall be provided with sensors.

8.4.2 Soil, Waste & Vent Piping System

8.4.2.1 Above ground piping is based on two pipe system as recommended in code of practice for soil and waste pipes as per (IS: 5329 - 1964).

- Soil pipes shall carry the wastes from WC's & urinals. Soil pipes shall connect directly to the manhole outside the building.
- Waste pipes shall carry the wastes from waste appliances (lavatory basins, kitchen sinks etc.). Waste pipes shall connect to Gully Traps outside the building, which shall in turn be connected to the external manholes.

8.4.2.2 Design Parameters

- Piping system will be designed in accordance with Code of Practice for Installation of Soil & Waste Pipes above Ground of the Bureau of Indian Standards (BIS) No. IS: 5329-1969.

- All vertical stacks will terminate as vent pipes at terrace level.

- All Vertical Stacks in the buildings will terminate at the ground floor level and connected to the external sewer. Pipe dia. and slope will be as per connected load.

8.4.2.3 Pipe Work

- All vertical stacks will be installed in pipe shafts on the external face of the buildings or in internal shafts within the building according to the architectural planning of the toilets.
- Provision will be made to provide cleanout doors and plugs for Roding and maintenance where necessary and required.

8.4.2.4 Materials for Soil, Waste & Vent Pipe System

Pipes used for Soil, Waste and Vent system shall be centrifugally cast iron pipes and fittings conforming to IS: 3989.

8.5 Rain Water System

8.5.1 Separate and independent rain water drainage system will be provided which collects the rain water from the roofs, balconies, paved area, lawns & roads and finally dispose the rain water from outside the building into the external catch basin chambers/ external drains.

8.5.2 Recharging pits are proposed in the green areas to allow S.W. drains to be collected and only overflow may be allowed to dispose off in the city storm water line.

8.5.3 Design Parameters

- Rainwater down takes piping system will be designed in accordance with IS Code & CPWD Specifications.
- All Vertical Stacks in the buildings will terminate at the ground level and connected to the external storm water line. Pipe dia. and slope will be as per connected load.

8.5.4 Materials for Rain Water System

8.5.4.1 Pipes used for Rainwater system shall be of uPVC pipes and fittings conforming to IS 4985.

8.6 Water Supply System

8.6.1 Proposed Water Management System

Reduce, Re-use, Re-cycle Model has to be adopted for meeting the water requirement. Following measures are proposed for reducing water consumption:

- Discipline use of water

- Installing water saving toilet fixtures and faucets and flow regulators

8.6.2 Source of Water Supply

The water supply shall be arranged from the nearby Melur Combined Water supply scheme by the District Administration. Borewells shall be the alternate source.

8.6.3 Filling of Under Ground WaterTanks

Incoming water, after treatment, if required, shall be stored in fire water tank and over flow from fire water tank shall be stored in raw water tanks/reservoirs.

Source: IS: 10500 Drinking Water Standards.

8.6.4 Water Tank Storages

It is recommended to have storage of water equal to minimum two days requirement. Therefore, the minimum capacity of the underground tank is considered for 2600 KLD.

Over Head Tanks: It is recommended to have storage of water equal to minimum half of one day requirement. Therefore, the minimum capacity of the Overhead tanks is provided for 1080 KLD.

8.6.5 Pumping, Overhead Storage & Distribution System

- Water from the Domestic & Flushing UG tanks shall be lifted to the overhead tanks of the Building through the booster pumping system.
- For Flushing of WC's a separate water supply system shall be provided and gravity supply through separate down-takes.

8.6.6 Materials for Water Supply

- Pipes used for internal / concealed water supply system within toilets & kitchen shall be of CPVC pipes with fittings.
- Pipes used for external exposed water supply system within shafts & terrace shall be of G.I pipes with fittings conforming to IS 1239 (Medium Class).
- Valves on branches, main line and delivery line of pumps shall have ball Valve/ butterfly valve of good approved quality, as per Requirement.
- Hot water pipes shall be insulated as per requirements.

8.7 Sewerage System

The domestic sewage generated from this block shall be disposed by gravity system into the first manholes around the building.

The system will be designed as per the provision made in SP: 35 Hand book on Water Supply and Drainage (with special emphasis on plumbing) and Manual on sewage. The collected sewage will be feed in to the proposed STP which after treatment will be used for flushing & irrigation.

8.7.1 Effluent Treatment Plant System

The effluent generated from the laboratories shall be disposed by gravity system into the effluent treatment plant of the block. After treatment in the ETP, the discharge shall be connected to the first manholes around the building.

8.8 Drainage System

8.8.1 Proposed Storm Water Drainage System

The proposed storm water drainage system shall carry the rainwater from the terraces, green areas and related clean paved areas of Buildings collected in the collection chambers and shall be connected to the main storm-water drainage system.

8.8.2 Design Parameters

- Storm water drainage system will be designed at a maximum intensity of 70 mm per hour with required run off coefficient.
- Min. Pipe diameters for main SWD will be 400 mm dia in line with local requirements.

All construction specifications with respect to the manhole sizes etc. will be respected and followed.

8.8.3 Appurtenances & Material Specifications for the Storm Water Drainage System

- Pipes used for external storm water drainage system shall be of RCC NP2 class pipes with collars joints conforming to (IS 458).

8.8.4 Manholes for Sewerage and Drainage System

- Manholes
- The manholes shall be constructed of brick masonry as per standard specifications of National Building Code
- Spacing of Manholes
- Manhole shall be provided with all the junctions, change of directions, change in diameters and as per connection requirement from every units.
- A distance of 15-20 meters on the main line depending on dia. of pipes and local conditions.

8.8.5 Manholes Covers

- Medium duty S.F.R.C. manhole covers for manholes on service roads.
- Heavy duty S.F.R.C. manhole covers for manholes on main roads, having frequent heavy traffic.

PLUMBING WORKS- CONSOLIDATED LIST OF BIS STANDARDS APPLICABLE

S. No	BIS Code No.	Description
1.	I.S : 1536 : 1989	Specification for centrifugally cast (spun) iron pressure pipes for water, gas and sewage (3rd Rev.) (Amendment 2)
2.	I.S : : 1993 1538	Specification for cast iron fittings for Pressure Pipes for water, gas and sewage (3rd Rev.)
3.	I.S : 3114 : 1994	Code of Practice for laying of C.I. pipes (2nd Rev.)
4.	I.S. : 782 : 1978	Specification for caulking lead (3rd Rev.)
5.	I.S. : l239 (Part 2):1992	Specification for mild steel tubes; tubular & other wrought steel fittings: Part 2 Mild steel tubular and other wrought steel pipe fittings (4th Rev.) (Amendment 1)
6.	I.S. : 1879 : 1987	Specification fo malleabl cast iron pipe fitting (2d Rev.) (Amendment 5)
7.	I.S. : 4984 : 1995	High density polyethylene pipe for water supplies (4th Rev.)
8.	I.S. : 783 : 1985	Code of practice for laying of concrete pipes (1stRev.) (Amendment
9.	I.S. : 4127 : 1983	Code of practice for laying of Glazed Stoneware pipes (1st
10.	I.S : 780 : 1984	Specification for sluice valve for water works purposes(6th rev)(50 to 300 mm size)(Amendment 3)
11.	I.S : 651 : 1992	Specification for salt glazed stoneware pipes and fittings (5th rev.)
12.	I.S. : 456 : 1978	Code of practice for plain and reinforced concrete (3rd Rev.)
13.	I.S. : 12820 : 1989	Code of practice for dimensional requirements of rubber gaskets for mechanical joints and push on joints for use with cast iron pipes and fittings for carrying water, gas & sewage.
14.	I.S. : 1172 : 1993	Code of basic requirements for water supply, drainage & sanitation (4th Rev.)
15.	I.S. : 1200 (Part-16) 1979	Code of practice for methods or measurements of building and Civil Engineering works: Part 16 Laying of water and including appurtenant items (3rd Rev.)sewer lines
16.	I.S. : 1200 (Part-19) 198 1	Code of practice for methods or measurements of building and Civil Engineering works: Part 19 Water supply, plumbing and drains (3rd Rev.)
17.	I.S : 1729 : 1979	Specification for sand cast iron spigot and socket soil, waste and ventilating pipes, fittings and accessories (1st rev.)
18.	I.S : 1742 : 1983	Code of practice for building drainage (2nd Rev.)

19.	I.S : 3989 : 1984	Centrifugally cast (spun) iron spigot and socket soil, waste and ventilating pipes, fittings and accessories (2^{nd} rev.)
20.	I.S : 778 : 1984	Copper alloy gate, globe and check valves for water works purposes (4^{th} rev.) (Amendment 2)
21.	I.S : 13095 : 1991	Butterfly valves for general purposes
22.	I.S : 5312(part1) : 1984	Swing check type Reflux valve (non-return valve): Part 1 Single door pattern (1^{st} Rev.) (Amendment 1)
23.	I.S : 5312(part2) : 1986	Swing check type Reflux valve (non-return valve): Part 2 Multi door pattern
24.	I.S : 1239(part1) : 1990	M. S. tubes, tubular and other wrought steel fittings: Part 1 Mild steel tube (5^{th} Rev.)
25.	I.S : 1879 : 1987	Malleable Cast Iron pipe fittings (2^{nd} rev.) (Amendment 5)
26.	I.S : 651 : 1992	Salt glazed Stoneware pipes & fittings (5^{th} Rev.) (Amendment
27.	I.S : 458 : 1988	Precast Concrete pipes (with or without reinforcement) (3^{rd} rev.)
28.	I.S : 1726 : 1991	C.I. Manhole covers & frames (3^{rd} rev.)
29.	I.S : 1916 : 1989	Steel cylinder pipe with concrete lining and coating (1^{st} rev.).
30.	I.S : 12592(part1) : 1988	Pre-cast concrete manhole covers and frames: Part 1 Covers (Amendment 3)
31.	I.S : 12592(part2) :	Pre-cast concrete manhole covers and frames: Part 2 Frames
32.	I.S : 6392 : 1971	Steel pipe flanges (Amendment 1)
33.	I.S : 6418 : 1971	C.I & malleable flanges for general Engg. Purposes.
34.	I.S : 4985 : 1988	Unplasticized PVC pipes for potable water supplies (2^{nd} Rev)
35.	I.S : 7181 : 1986	Horizontally cast double flanged pipes for water, gas and sewage.(1^{st} Rev.) (Amendment 1)
36.	I.S : 210 : 1993	Grey iron casting. (4^{th} Rev.)
37.	I.S : 4985 : 1988	Un-plasticized PVC pipes for potable water supply.
38.	I.S: 7558-1974	Code of practice for domestic hot water installation.
39.	I.S: 2064-1973	Code of practice for selection, installation and maintenance of Sanitary appliances
40.	I.S: 2065-1983	Code of practices for water supply in building
41.	I.S: 2183 (Part-I)-	Code of practice for Plumbing in multi-storeyed buildings.

9.0 SERVICES

- Electrical
- Low Voltage Systems
- Telecommunication & Data Transmission, Access Control & CCTV Systems
- HVAC
- Fire Fighting & Protection System

9.1 Electrical

9.1.1 Reference Standards

The following standards and codes shall be followed during detailed design of the services:

- Local Bye – Laws
- IEC 60364 – Electrification of buildings
- IS 732 – Code of practice of electrical wiring installations
- – IS4347 – Code of practice of Hospital lighting
- National Building Code of India – 2016
- Energy Conservation Building Codes 2007 (Revised Version May 2008)
- Relevant Codes of Bureau of Indian Standards
- Institute of Electrical & Electronic Engineers (Design Hand Book)
- Illuminating Engineering Society of North America (Design Hand Book)
- IEC 60726/ IS: 2026 (Part 1, II and IV)/ IS 11171(Part III): Transformers
- IEC 60831/ IS 13340 & IS 13341: Capacitors
- IEC 60947 / IS 13947: Specification for Low Voltage Switch Gear & Control Gear
- IEC 62305: Lightning Protection System
- IS 3043: Earthing& Bonding

9.1.2 Summary of Electrical Load calculation

AIIMS Rajkot campus is broadly divided in to two zones according to building types (i.e institutional & educational as one zone and Residential zone two):

Summary of electrical load for Zone 1:

Total Connected load (kW)	Max. Demand Load after diversity factor (Kw)	Max. Demand Load after considering Loading@90% &Efficiency@95% (KVA) – For	Max. Demand Load after considering loading @ 85% & efficiency @90% (KVA)- For DG Sizing
10280	8234	9103	9103

Summary of electrical load for Zone 2:

Total Connected load (kW)	Max. Demand Load after diversity factor (Kw)	Max. Demand Load after considering Loading@90% &Efficiency@95% (KVA) – For	Max. Demand Load after considering loading @ 85% & efficiency @90% (KVA)- For DG Sizing
2942	2364	3072	1981

9.1.3 Sources of Power Supply

The incoming 11 KVA power supply shall be made available at the proposed substation by State Government.

The DG sizing is being done based on critical load requirement of the building. Since full reliance cannot be placed on available Power source (risk of blackout or unacceptable voltage variation), more than 50% of complex load has been considered as necessary for power backup. Full load of essential items such as external lighting, UPS, server etc. and partial load for non-critical items such as HVAC, Lifts, internal lighting and bio medical equipment is taken in calculation for DG sizing. Some essential loads such as emergency lighting, LV systems, work stations, operation theatre and ICU bed headed panels, etc. shall be additionally backed up by using UPS system.

9.1.4 Emergency back-up

It is proposed to provide emergency power for the entire complex through various DGs of total 11 MVA capacities. All Lighting, Convenience Power, HVAC, PHE, Lifts and Fire Fighting System shall be backed up by the DG sets. Entire installation and distribution shall be in accordance with guidelines laid down by the CPCB.

9.1.5 UPS Power

It is proposed to feed essential loads directly through various UPS system, central and standalone, totaling more than 2070 KVA .UPS power shall be supplied on centralized basis but where required stand-alone UPS system shall be provided to support critical area or services like medical emergency, medical equipment room, IT room, . work stations, operation theatre and ICU bed headed panels, etc. UPS in general shall be provided to cater requirements such as emergency lighting, Lab Equipment, security system etc.

9.1.6 LT Power Distribution Scheme

LT Power from the Transformer/ DG Sets shall be brought to the Main LT panel. The transferring of power from electric utility to DG set and vice-versa shall also be provided at main LT Panel through PLC & Auto Mains Failure. In case of multiple DG source, power will be either proportionately distributed among DG via bus coupler/s or they will be operated sequentially through synchronizing PLC and controllers incorporated in synchronization panel. Power from the main LT panel shall feed to Motor Control Centers, Rising Mains, Control panels, Main Distribution Boards etc.. Distribution boards for lighting & power shall be provided throughout the building for each floor or defined space. Main Distribution Boards and Sub- distribution Boards shall incorporate MCCBs/ELCBs/MCB etc. as per building requirement. Distribution boards shall be located in accessible positions to suit the area of each floor within the building. Final Distribution Boards shall be fed from these MDB's & SDB's by means of either XLPE/PVC insulated aluminium armored cables or PVC insulated copper wires in appropriately sized MS/PVC conduits.

9.1.7 Energy Metering

Following metering arrangement through dual electronic energy meter (EB & DG Power) shall be provided along with a provision of bulk metering and maximum demand indicator.

- Mains supply
- Individual DG Power
- External Lighting Consumption

9.1.8 Power Factor Improvement

Automatic power factor compensating multiple capacitor units (APFC panel) shall be provided for maintaining an average power factor between 0.95 to unity to have effective savings in energy cost.

9.1.9 Earthing System

The earthing system shall be based on the Indian TNS system and shall conform to IS 3043.

Earthing for light and power points shall be carried out with insulated copper earth wire running throughout the length of the circuit and shall be terminated at equipment, fixtures etc. with effective bonding to main earth grid.

All the pits and main earthing bars are to be connected to each other to make a common earthing electrode grid.

9.1.10 Lightning & Surge Protection System

The structures shall be protected against lightning in accordance with the requirements of IEC 62305.

9.2 Low Voltage Systems-Fire Detection and Alarm System, Public Address System Etc.

9.2.1 General

Automatic fire detection system with distributed voice evacuation system shall be installed. The fire alarm system shall consist of all necessary hardware equipment and software programming to perform the following functions.

- Fire Detection and Alarm operation
- Monitoring of fire in fire protected areas
- Control and monitoring of Elevators, smoke control equipment, emergency call system etc.

9.2.2 Fire Detection and Alarm System

The fire detection and alarm system control panel shall monitor and display the activation of each device in the system, such as heat detector, smoke detector, manual pull unit, sprinkler water flow switch and sprinkler valve tamper switch or any other input device which may be required.

The system shall be of the addressable/conventional analog multiplexed type, completely supervised, such that a break in any wire (loop) shall not prevent any device from operating, with multiplexing cabinets installed in appropriate approved locations.

9.2.3 Emergency Public Address System for Emergency Evacuation and Voice Alarm

This system shall permit two way talk back communication in the form of emergency announcement from the main control panel to any floor or group of floors simultaneously. The system shall be capable of manual operation or automatic operation initiated by the fire alarm system. Speakers shall be located as required.

1 Public address system is designed to serve dual purpose of making general/ emergency announcement and playing light music.

2 These different signals are to be transmitted through the same sets of speakers. Hence different level of priorities shall be allotted to different signals.

   i. Highest priority for announcement
   ii. Musical shall be the next priority.

3 A separate zone for every floor of the building areas divided proportionately is proposed so that the paging can address as per requirement through zone selection switch.

4 Main control panel and all necessary associated equipment such as pre–amplifiers, power amplifiers etc. shall be provided in the EPABX room.

9.2.4 Equipment

The Main control panel shall be located in the Fire control room in a location at Ground Floor, readily accessible from outside, for easy access for fire rescue team. Repeater panel can also be considered &it will be placed at reception/security room.

Ceiling mounted photoelectric type smoke detectors shall be provided as required. Heat sensor shall be installed at required locations on each floor.

- Break-glass stations (manual fire alarm stations) shall be located next to the door at each floor exit staircase and at intermediate locations as required.
- Voice alarm speakers shall be located throughout the building in the common area and lift lobby.
- Sprinkler water flow switch and valve tamper switch shall be provided at each sprinkler system valve location.

9.2.5 Battery Backup

Standby batteries backed up from UPS shall be provided to operate the entire Life Safety System in its normal supervisory mode for a period of 24 hours.

All wire and cable used for the Fire detection & Alarm system shall be approved for use in fire alarm systems for prolonged use during fire conditions. The insulation shall be listed for this use by a recognized testing agency. FRLS cable shall be used for fire detection and alarm system.

9.3 Telecommunication& Data Transmission, Access Control & CCTV Systems

9.3.1 TELECOMMUNICATION & DATA TRANSMISSION SYSTEM

General

This report outlines the design features, basis of design, estimated requirements for the Telecommunication and Data Transmission System.

Common Utility

All voice points as required in Public areas, Service areas, and Common areas shall be connected through 2/4 pair telephone cable from the tag block/MDF located as per requirement.

Security Systems Including CCTV, Access System Etc.

The proposed security system shall comprise of closed Circuit TV System (CCTV), Access System.

Closed Circuit TV System (CCTV)

CCTV has been proposed for monitoring adequate security in important areas such as entry points, gathering location, cameras will be fitted to monitor the movement for surveillance. CCTV camera shall be compact, self-contained for unattended operation .All this can be monitored from the security room and from other required rooms.

- Perimeter Protection: It is proposed to provide outdoor type PTZ camera at strategic location as required.
- The monitoring console shall be located in the Security/BMS room. IP based CCTV camera system are proposed which shall give monitoring team flexibility in viewing the images from multiple locations.

Access Control System -System Description

The objective shall be to provide restricted entry/exit in the entire premises. The person who is authorized to enter the particular area shall not be allowed to intervene in any other areas thus restricting unauthorized personnel entry & exit through critical areas and facilitate effective people management.

Data System & LAN system

To handle important internal and external office communication, exchange of data, major LAN &EPABX equipment shall be provided in the server room located at the ground floor.

Telephone & data points shall be provided as per the requirement.

LAN CAT 6 UTP cables shall be used for interconnecting the RJ 45 outlets to Intermediate Switch (Hub) or directly to IT room, if the running length limit permits. These Intermediate switches shall be installed in a rack/cabinet and located in IT room of the respective floors. Fibre Optic cable or CAT-6 UTP cable shall be used for backbone to interconnect the Intermediate switch to IT room's Main/Core switch.

With EPABX system, some of the lines shall be directly provided to Top management's office & Telephone operators for direct communication to outside. Rest of the lines shall be routed through EPABX for the use of patrons & staff through extensions. The following area/desk shall have direct access to outside Tel. lines:

A) Telephone Operator's room

B) Security room

C) Fire officer room

Nurse call system

System has been provided in ICU/HDU/Triage beds only. It is a software based system to communicate between patient and nurse in specified locations. It comprises of the nurse station display unit, Bedside call/reset unit, toilet pull cord. The way the system works is quite simple, every time the patient uses the bedside call unit or the toilet pull cord, a corresponding indication is shown in the nurse display unit that is placed in the nurse station. After attending that particular patient, the same can be reset.

9.4 HVAC

9.4.1 General

- This report outlines the design features, basis of design, estimated requirements etc. of the HVAC system.
- The system requirement, basis of design and general outline of the Ventilation system are also given.
- This report is based on details of the Chilled water system (Water Cooled) using Screw/Centrifugal Compressors.
- The proposal for installing Microprocessor based control system (BMS) is also outlined.

9.4.2 Design Considerations:

The option proposed to be adopted for this building is with the considerations of the following

1. Low capital cost.
2. Energy efficient throughout the varying load patterns.
3. Providing required Indoor air quality (IAQ) with reduced operating cost.
4. Maximum flexibility of operation.
5. Use of highly responsive control system (BMS) to optimize system functioning.

9.4.3 Capital Cost

- The selection of equipment is designed to achieve the lowest capital cost consistent with energy efficient modern technology.
- The choice of equipment and specifications will provide the best possible system at a reasonable price.

9.4.4 Energy Efficient

The air conditioning systems operate between a minimum demand of 40% and up to maximum demand of 95% for a major part of the year.

The selection proposed is such that the overall power requirement remains consistent with the demand, avoiding all possible waste.

9.4.5 Indoor Air Quality

The indoor air quality shall be as per ASHRAE standard.
This is to prevent sickness syndrome in people who occupy these buildings for a long period. This will also help to control the concentration of harmful bacteria to provide a comfortable environment, to save energy, to prevent exhilaration / infiltration of pathogens etc.

9.4.6 Flexibility

- There will be multiple chillers, each with their own pumps.
- Each chiller will have separate pumps. Therefore, the number of pumps operating at any time will not be more than the number of chillers, thereby saving energy.
- In addition each floor will have independent AHU/FCU. For larger areas AHUs will be proposed and for smaller areas FCUs will be proposed.
- This will ensure that the equipment in operations is as per demand without any wastage of power.

9.4.7 BMS System

It is proposed that a Microprocessor Based DDC Control system, (BMS) should be used for operating the HVAC plant, water supply system, common lighting and for monitoring other systems including the AHUs. The use of BMS has the following advantages.

The sequencing of the chillers and pumps will be done automatically as per the load requirement, thus avoiding wasteful operation.

The plant will operate automatically as per programmed schedule the controllers will estimate the actual requirement on any particular day depending on outside temperature and accordingly decide the lead time required to achieve design inside conditions, in all areas, at the start of offices.

All standby pumps are rotated automatically to provide equal wear and tear and reduce fatigue.

All external lighting and common area lighting are controlled automatically to save energy.
The water supply system is controlled and operated as per requirement without any wastage.
All other services are monitored.

9.4.8 Central Air Conditioning System

This design concept proposal elaborates the HVAC system proposed, reference standards, basis of design, cooling load requirement (TR) for air-conditioning, approximate cost of the HVAC system and its electrical power and make up water requirements, allied work generally related to HVAC, space required for the air-conditioning plant.

9.4.9 REFERENCE STANDARDS

- National Building Code of India (NBC)
- Energy conservation Building Code 2007 (ECBC)
- Bureau of Indian Standards (BIS) Codes:
  - IS : 655-1963 (Reaffirmed 1991) Metal air ducts
  - IS : 659-1964 (Reaffirmed 1991) Air-conditioning (Safety code)
  - IS : 1239 (part-1)-1990 Mid steel pipes

- ASHRAE Standards
- ASHRAE Hand Book
    a. Fundamentals 2001
    b. Refrigeration 2002
    c. Applications 2003
    d. Systems & Equipment 2004
- Duct construction standards as per relevant BIS codes & SMACNA standards.
- Air Filters as per ASHRAE 52.1-1992
- Indoor Air Quality as per ASHRAE 62-2001
- NABH

Motors, cabling, wiring and accessories as per BIS codes. IE Rules / IS codes.

DETAILS VRV SYSTEM:

- Air shall be distributed through Indoor units i.e. Ductable type, Hi wall Type & Cassette type units.
- Corded/Cordless remote control shall be provided with each unit to control the system.
- It is proposed to provide independent indoor units for each floor of building for air conditioning the areas.
- Fresh air supply to be proposed in the offices space throughout door air processing unit.
- The cool air from the ductable indoor units will be distributed through Pre insulated ducts.
- A common set of insulated copper pipes will supply refrigerant to all the indoor units. Conditioned air would discharge through the extruded aluminium diffusers/Grilles.
- All Pre insulated ducts will be acoustically lined from inside up to 10 feet length and insulation on duct would be done.
- It is also proposed to provide exhaust fans for the Toilets, Utility, Mechanical rooms, area etc. Fans Efficiency shall be more than 80%.
- Since this building is being constructed in phases, hence the major problem arises in the placement of VRV Outdoor units. When the first phase shall be completed, the Outdoors shall be placed on the terrace of the fourth floor and the piping connections shall be made accordingly. When the 2ndphase get started, duct connection shall be done on the condenser fans of the outdoors and shall be directed to the exposed area to exhaust out the hot air. When the construction shall be completed, outdoors placed on fourth floor's terrace shall be shifted to the seventh floor's terrace.
- Motorized smoke and fire dampers shall be provided in accordance with ASHRAE/NFPA within supply air ducts and return air ducts/spaces to prevent spread of smoke / fire to adjacent areas.
- It is also proposed to provide exhaust fans for the toilets, utility, mechanical rooms, etc. The efficiency of fans shall be more than 80%.

9.4.10 BRIEF OUTLINE SPECIFICATION FOR MAJOR EQUIPMENT:

- Water Chilling Machines: These water chilling machines shall be screw/centrifugal type per AHRI 550-590 and shall consist of most efficient rotary screw compressor and motor, condenser, evaporator, microprocessor based control panel and full charge of environment friendly refrigerant R-134A or R 407c and oil. Selection of air Cooled/water cooled chiller m/c will be decided during detailed engineering stage.
- Pumps: Pumps shall be centrifugal suitable for specified duty. Motors shall be energy efficient, TEFC type. Primary & secondary chilled water pumps (VFD driven) shall be provided with mechanical seats so as to prevent leakage of chilled water through glands.
- Air Handling Units: Air handling units shall be double skin construction draw- through type comprising of filter section, chilled water coil section and fan section. Double skin panels made of galvanized steel, pressure. Injected with foam insulation, Outer sheet of panels shall be made of galvanized pre-plasticized sheet and inner sheet of plain GI sheet. The fan shall be Direct Coupled VFD driven,, Coils shall be copper tube aluminium fin construction, 6 or adequate nos. of rows. Condensate drain pan shall be stainless steel construction, generously sloped to have zero water retention.
- Fan Coil Units: FCU's shall be horizontal, blow-through type, each complete with 3/adequate row deep chiller water cooling coil of copper tube aluminium fin construction, centrifugal blower, filter and condensate drain pan of stainess steel construction.
- Cooling Towers: If system chosen is water cooled, suitable capacity cooling tower will be chosen. It shall be induced/forced draft suitable for outdoor use. Tower shall be vertical, counter/ cross flow type, FRP construction in rectangular/ square shape complete with fan, TEFC motor, surface and spray section, galvanized steel supports all mounted with in FRP basin.
- Piping: All chilled water and condensing water pipes shall be mild steel Class C (heavy duty) conforming to relevant BIS codes. All jointing in the pipe system shall be by welding. Various types of valves such as butterfly valves, balancing valves and non- return valves shall be provided in water lines.
- Condensate Drain Piping: shall be PVC pipes with relevant IS codes.
- Air Distribution System: All ducts shall be fabricated from galvanized steel sheets of various thicknesses ranging from 24 gauges to 18 gauges according to duct sizes and in accordance with BIS Code. SMACNA standards may be used for factory fabricated ducts. Grills / diffuser shall be powder coated extruded aluminium construction and shall be provided as per the requirement of interior design.
- Smoke Dampers and Pressurization: Smoke dampers shall be provided in accordance with ASHRAE/ NFPA with in supply air ducts and return air ducts/ opening at all AHU room wall crossing and at fire rated wall crossings, to prevent spread of smoke to the adjoining areas. Smoke dampers shall be motorized and actuated by smoke sensors. Lift wells shall be pressurized by supplying air from the top through the fan installed on terrace. These fans shall be actuated by smoke sensors in case of detection of fire on any affected floor.

9.4.11 System Design (Low Side)

i. It is proposed to provide Central double skin Air handling Units for each floors of building for air conditioning the areas.

ii. Laboratory & other critical areas shall be fitted with Fine/HEPA filters.

iii. The cool air from the central Air handling units will be distributed through insulated GI ducts.

iv. The cool air from the central Air handling units will be distributed through insulated Pre -fabricated GSS ducts.

v. A common set of insulated chilled water pipes will supply water to all the central AHUs and FCUs.

vi. Conditioned air would discharge through the extruded aluminum diffusers/Grilles.

vii. It is also proposed to provide exhaust fans/blowers for the Toilets, Utility, Mechanical rooms etc.

viii. Motorized smoke and fire dampers shall be provided in accordance with ASHRAE /NFPA within supply air ducts and return air ducts/spaces to prevent spread of smoke/ fire to adjacent areas

9.4.12 PROPOSED AIR CONDITIONING SYSTEM FOR BUILDING:

The total central air-conditioning load for hospital block works out to be around 3000 TR.

Total air-conditioning load for educational, auditorium, animal house & admin buildings works out to be around 900 HP. VRV air conditioning type is chosen for educational, auditorium& admin buildings to optimize energy and it will also save considerable amount of space in buildings.

Split air conditioners for PG buildings is taken in estimate and provision for same is kept in other residential building wherein only load is considered for Transformer sizing calculation.

9.4.13 VENTILATION SYSTEM: Pressurization

Staircase well (if enclosed), elevator shaft and Lift lobby pressurization shall be carried as per NBC norms. Mechanical blower placed over Lift/ staircase mumties shall be actuated through smoke detection system and provide safe passage in case of emergency.

9.5 Fire Fighting & Protection System

9.5.1 Introduction

i) Type of the Buildings -- Institutional, Educational, Assembly and Residential

ii) References& Design Guideline Sources

a) National Building Code of India - (Latest Edition, November 2016 -- Part-IV, Fire & Life Safety)
b) I.S:3844-1989 - Code of practice for installation and maintenance of internal fire hydrants and hose reels on premises.
c) I.S:13039-1991 - Code of practice for external hydrant system provision and maintenance.
d) I.S:2190-1992 - Code of practice for selection, and maintenance of first aid fire extinguishers.
e) I.S:15105:2002 – Code of Practice for Design and Installation of Fixed Automatic Sprinkler Fire Extinguishing System.

9.5.2 Water Storage

- Underground Static fire tank - Proposed reservoir shall be used as storage tank.
- Overhead storage fire tank - Overhead fire water tanks on the terrace will be provided as supplementary fire storage as per NBC requirement/ Bye laws.
- Fire Pumps

(i) Considering the multiple number of building, it is recommended to provide Fire Pumps. Provision for individual buildings are taken in Preliminary Estimate.

(**i**) All fire pumps shall be single stage and single outlet pump to control the pressure at all levels.

(**i**) All fire pumps shall be with positive suction arrangements.

(iv) All the fire pumps shall cut-in automatically based on the pressure settings, so as to ensure that the entire fire main line, risers etc. are pressurized on a continuous basis.

(v) The jockey pump shall automatically cut-out based on the pressure settings. However, the remaining fire pumps shall off only in the manual mode.

- Material

Mild steel class 'C' tubes confirming to IS: 1239/3589 shall be used in fire & sprinkler system.

9.5.3 Wet Riser & Hydrants System

The firefighting system shall be provided mainly as per National Building Code of India 2016 (SP 7:1983 Part IV) and other relevant I.S codes and it shall be consisting of underground fire tanks and terrace tanks as per NBC guidelines.

Each Fire Hose Cabinet shall be consisting of:

- One no single headed hydrant valve.

- 2 nos., 63mm dia and 15m long rubberized fabric lined hose pipe as per I.S:636 Type-II.
- Gunmetal male and female instantaneous type coupling as per I.S:903 with I.S. specifications.
- Gunmetal branch pipe with nozzle as per I.S:903.

9.5.4 Sprinkler System

Sprinkler System shall be provided for all floors as per NBC guidelines.

Generally, for sprinkler system design, NBC-2016, IS 15683 : 2006 shall be followed (Indian Standard for Design & Installation of Fixed Automatic Sprinkler Fire Extinguishing Systems) and where required, guidelines of the Tariff Advisory Committee (TAC), as well as relevant NFPA Codes shall be consulted.

9.5.5 Portable Fire Extinguishers

The portable type fire extinguishers shall be provided at all levels of the building, at strategic locations as per requirements, generally to follow NBC-2016 and IS – 2190: 1992.

FIRE FIGHTING WORKS- CONSOLIDATED LIST OF BIS STANDARDS APPLICABLE

S.No	IS Code No.	Description
1.	SP 7: Part IV - 2016	National building code – Fire protection
2.	IS: 1239 –1990 (Part I & II)	Specifications for mild steel tubes, tubulars and other wrought steel fittings.
3.	IS: 3589 -2001	Specifications of steel pipes for water and sewage (168.3 to 2540mm outside diameter)
4.	IS: 778 -1984	Specifications for copper alloy gate, globe and check valves for water works purposes.
5.	IS: 14846 -2000	Specifications for sluice valves for water work purposes (50 to 1200 mm size).
6.	IS: 5312 – 1984	Specifications for swing check type reflux (Non-return) valve.
7.	IS: 5290 – 1983	Specifications for landing valves.
8.	IS: 884 – 1985	Specifications for first-aid hose reel for firefighting.
9.	IS: 903 – 1984	Specifications for fire hose delivery couplings branch pipe, nozzles and nozzles spanner.
10.	IS: 2190 – 1992	Code of practice for selection, installation and maintenance of portable first-aid fire extinguishers.
11.	IS: 2878 – 1986	Specifications for fire extinguisher Carbon-di-oxide
12.	IS: 3844 – 1989	Code of practice for installation and maintenance of internal fire hydrants and hose reels on premises.
13.	IS: 2189 – 1999	Code of practice for selection and maintenance of automatic fire detection and alarm system.

14.	IS: 9668 – 1999	Code of practice for provision and maintenance of water supplies for firefighting.
15.	IS: 1538 – 1993	Specifications for cast iron fittings for pressure pipes for water, gas and sewage.
16.	TAC Manual-1998Twelfth edition	Tariff advisory committee's Manual for fire hydrant system.
17.	TAC Manual-1998Second edition	Tariff advisory committee's Manual for sprinkler system (Sprinkler regulations)
18.	TAC Manual- 1998	Tariff advisory committee's Manual Rules for Fire alarm system
19	I.S:15683	Portable Fire Extinguishers-Performance and Construction - Specification

10.0 GREEN BUILDING CONCEPT

GREEN BUILDING DESIGN

The building shall be designed for 3-star GRIHA Rating as per MNRE guide lines.
The guidelines shall involve:-

- Elimination of CFC's & Reduction of Carbon dioxide and other pollutants
- Conservation of power, water, and other natural resources
- Maintaining an green environment for the betterment of the people working in the building and the surroundings
- Reducing the rainwater run-offs.
- Providing gadgets for passive and active solar and photovoltaic options.
- Adopting the energy saving and eco-friendly gadgets all throughout the areas of the building.
- Using packed gravel/grass-crete pavers etc. for replenishment of ground water.
- Use high-efficiency windows and insulation in walls, ceilings, and floors.
- Use of low-embodied energy fly ash in combination with cement for RCC structures, in-fill walls, load bearing structures, mortar, and binders.
- Reduction in high energy materials with less energy-intensive materials and utilization of regionally available materials.
- Interior finishes and products to be low-energy finishes / materials / products, which minimize wood as a natural resource or utilize industrial waste.
- Minimal hard paving on-site to minimize the imperviousness of the site and minimize the heat island effect on site.
- Building orientation optimized to minimise solar heat gain.
- Automatic controls to be installed for outdoor lights to maximize efficiency.
- Outdoor lighting load partially met through renewable energy.
- Day lighting of the living area to meet NBC standards to minimise dependence on artificial lighting.
- Compliance to GRIHA thermal comfort conditions and benchmark EPI.
- Reduction of lighting power density (LPD) to confirm to green building standards.
- Energy meters shall be installed to measure and record energy use.
- Use of T5, compact fluorescent lamps (CFLs), LED lights and sodium vapour lamps for increased efficacy.
- Use of electronic ballast instead of electromagnetic ballast.
- Use of low loss, oil based transformers along with capacitor banks to improve power factor.

The emphasis shall be on the following:-

- Maximum use of natural light and ventilation in the building
- Zoning and segregation of similar energy usage areas to centralize the functioning
- Use of solar water heating devises
- Minimizing the use of heat ventilation and air conditioning systems
- Rain water harvesting system
- Usage of energy efficient lights
- Recycle the waste water for secondary usage

11.0 ANNEXURE

11.1 PRELIMINARY COST ESTIMATE

	PROPOSED AIIMS LIKE APEX INSTITUTION AT RAJKOT, GUJARAT		
Sl. No	**Description**	**Built up area in sqm**	**Amount in Rs.**
A. SUMMARY OF COST BUILDING & SERVICES			
(i)	***Buildings***		
1	Hospital Building (750 beds)	71,000	2,850,222,241
2	Teaching Block (100 MBBS Students + 60 Nursing students) + Admn. Block	22,500	861,261,240
3	Auditorium (500 Seater)	2,500	98,848,400
4	Animal House + service blocks	3,000	85,154,720
5	Night Shelter (250 Persons)	3,700	102,829,160
6	Guest House (14 rooms)	650	18,658,080
7	Director's Bunglow	380	9,396,184
8	Type-6 (6 Block of 1 units each)	1,620	41,871,816
9	Type-5 (1 Block of 24 units each)	4,920	140,337,583
10	Type-4 (1 Blocks of 21 units each)	3,150	91,398,975
11	Type-3 (1 Blocks of 18 units each)	1,440	42,380,352
12	Type-2 (3 Blocks of 36 units each)	7,560	211,810,756
13	PG Hostel-D1 type (1 Block of 312 capacity)	7,400	219,188,010
14	UG Hostel-Girls (For 240 Students)	5,750	171,347,764
15	UG Hostel-Boys (For 240 Students)	5,750	171,347,764
16	Working Nurses Hostel (For 150 Nurses)	4,000	117,032,160
17	Nursing student Hostel (For 288 students)	4,500	126,138,992
18	Convenient Shopping Complex and Restaurant	250	9,324,000
19	Dining Block	1,730	47,972,456
	Sub-total (I)	**151,800**	**5,416,520,652**

PROPOSED AIIMS LIKE APEX INSTITUTION AT RAJKOT, GUJARAT			
(ii)	**Services**		
a	External Development		553,449,725
b	HVAC,Sub-Station, LV System etc		1,653,095,744
c	Underground & Overhead water tanks including Fire Tanks		140,280,000
d	STP &ETP		75,000,000
	Sub-total (II)		**2,421,825,469**
	Sub-total (c) =I+II		**7,838,346,120**
	Contingencies @ 3%		**235,150,384**
	Sub Total A		**8,073,496,504**
	Cost Escalation @6.5% for beyond 2 years		**1,049,554,546**
	Total A		**9,123,051,050**
B. FURNITURE			
	Furniture		250,000,000
	Sub Total		**250,000,000**
	Contingencies @ 3%		**7,500,000**
	Total B		**257,500,000**
C. MEDICAL EQUIPMENT			1,853,200,000
	Total C		**1,853,200,000**
D. CONSULTANCY FEE			
	Consultancy @5% on (A) i/c 18% GST		**538,260,012**
	Consultancy @2% on (B+C) i/c 18% GST		**49,812,520**
	Total D		**588,072,532**
	Total (A+B+C+D)		**11,821,823,582**
E. STATUTORY APPROVALS			
	Add for statutory approvals including **GRIHA** Fees	**L.S.**	5,000,000
	Total E		**5,000,000**
	TOTAL (A+B+C+D+E+F)		**11,826,823,582**

PROPOSED AIIMS LIKE APEX INSTITUTION AT RAJKOT, GUJARAT			
F	**PRE CONSTRUCTION ACTIVITIES**		**150,000,000**
G	**Grand Total (G)**		**11,976,823,582**
	Rs in Cr.		**1,197.68**
	Say Rs in Cr.		**1,198.00**

Note:-

1.The above cost does not contain any factor for GST

2.The provision for residential accommodation for different categories included in the above estimates shall be reviewed during detailing as per actual requirements.

Note:

A	These Preliminary cost estimates are prepared based on CPWD PAR rate 2012 with Cost Index as on 1-7-2018 and current prevailing market rates for non-scheduled & furniture items.
B	It may be noted that as per CPWD Office Memorandum DG/PAR/03 dated 14.02.2014, where anticipated time for submission of the preliminary estimates to completion of the work is more than two years, the cost enhancement should be considered @6.5% per annum on effective amount of project cost for the period in excess of two years. This cost has been included in the estimate.
C	**Exclusions :**
	Following items are not included in the preliminary cost estimates:-
1	Maintenance charges for Lab equipment
2	Cost of Consumables and Spares w.r.t HVAC,DG Sets, Lifts, Electrical Substation etc.
3	The cost of Lab equipment
D	**Inclusions :**
1	Office equipment viz. computers, printers, etc. for Rs. 4.Crs. Included
2	Cost estimates includes Rs. 25.75 Crs. towards provision of furniture for first 2 years.
3	Hospital Specific IT Software works like Hospital Management Information System (HMIS), Picture Archival Access System (PACS), Library Management System along with required hardware included for Rs.24.25 Crs.

CONSTRUCTION OF AIIMS RAJKOT

Hospital block

No. of Storeys =	B+G+5			
Ground Floor Area to 5th floor area (each floor 10100 Sqm)	60600	sqm	(Excluding Basement)	
Basement area =	10400	sqm		
Above floor 6 level	10100	sqm		
Larger Module Area (35% of Area of Main Block)	21210	sqm		
Floor Height =	4	mts	(B+G+5)	

Ref DPAR 2012 item	Description	Area / Qty	Unit	Rate	Amount
1.0 (A)	**(A) RCC Framed structure**				
1.1 (A)	RCC Framed Structure Upto Six Storeys				
1.1.1 (A)	Floor Height 3.35 mts	60600	sqm	23500.00	1,424,100,000.00
1.0 (B)	**(A) RCC Framed structure (Normal Building)**				
1.1 (B)	RCC Framed Structure Upto Six Storeys				
1.1.1 (B)	Floor Height 3.35 mts	60600	sqm	19000.00	1,151,400,000.00
1.2	**Extra for**				
1.2.1	Every additional storey over six storeys upto nine storeys	10100	sqm	560.00	5,656,000.00
1.2.3	Every 0.3mt. Additional height of floor above normal floor height of 3.35mts / 2.90 mts (4.20-3.35=0.85/0.3)	60600	sqm	765.00	46,359,000.00
1.2.8	Resisting Earthquake forces	71000	sqm	1140.00	80,940,000.00
1.2.9	RCC Raft foundation (GF area only)	10400	sqm	6450.00	67,080,000.00
1.2.12	Larger modules over 35 Sqm. (applicable area) 35% of Total Covered Area	21210	sqm	1500.00	31,815,000.00
1.3	**Basement Floor**				
1.3.1	Floor ht. 3.35 mtr.s with normal waterproofing	10400	sqm	19000.00	197,600,000.00

Ref DPAR 2012 item	Description	Area / Qty	Unit	Rate	Amount
1.3.2	**Extra for basement with floor (applicable basement area only)**				
1.3.2.1	Every 0.3 mtr. Addl. Height (above 3.35 mt.)=4.2-3.35=.85/0.3	10400	sqm	6573.33	68,362,666.67
1.4	**Fire fighting (Served area only) Hospital Floors**				
1.4.1	With wet riser system	71000	sqm	500.00	35,500,000.00
1.4.2	With sprinkler system	71000	sqm	750.00	53,250,000.00
1.5	**Fire Alarm System (Served area only) (Floor area +Basement)**				
1.5.2	Automatic Fire Alarm System	71000	sqm	500.00	35,500,000.00
1.6	Operation Theatre (OPD) Extra provision	3000	sqm	2150.00	6,450,000.00
1.7	**Pressurized mechanical ventilation system in the basements (with supply of Exhaust blowers)** (applicable area only)	10400	sqm	650.00	6,760,000.00
	Total SH 1				**2,059,372,666.67**
3.0	**Services**				
3.1	Internal Water Supply & Sanitary Installation @ 10% on normal building	1151400000		10%	115,140,000.00
3.2	External Service Connection @ 5% on normal building	1151400000		5%	57,570,000.00
3.3	Internal Electric Installation @ 12.5% on normal building (Including Basement)	1349000000		12.50%	168,625,000.00
3.6	**Extra for**				
3.6.1	Power Wiring and Plugs @ 4% on normal building	1151400000		4%	46,056,000.00
3.6.3	**Lightening conductors**				
3.6.3.2	5 to 8 storeys buildings @0.33% on normal building	1151400000		0.33%	3,799,620.00
3.6.4	Telephone conduits @ 0.5% on normal building	1151400000		0.50%	5,757,000.00

Ref DPAR 2012 item	Description	Area / Qty	Unit	Rate	Amount
3.6.6	Computer Conduiting @ 0.5% on normal building	1151400000		0.50%	5,757,000.00
3.6.7	Quality Assurance@ 1% on normal building	1151400000		1.00%	11,514,000.00
	Total SH 2				**414,218,620.00**
4	**LIFTS**				
4.1	Passanger Lift				
4.1.8	Capacity/Person = 20 Weight = 1360 Kgs. Speed in M/Sec= 0.75 M/Sec Travel= G+4 Doors= Power Operated Control= ACV VVF	25	Each	2400000.00	60,000,000.00
	Additional Price for each additional Floor	25	Each	450000.00	11,250,000.00
	Total SH 3				**71,250,000.00**
	Total Cost as on 1.10.2012	**[I]**		**I= SH(1+2+3)**	**2,544,841,286.67**
	Add Cost Index @ 112% on CPWD PAR 2012 effective from 1-07-2018	**[II]**		2,544,841,286.67	**305,380,954.40**
	TOTAL COST AS PER CPWD PAR' 2012 AFTER ADDING COST INDEX				**2,850,222,241.07**

CONSTRUCTION OF AIIMS Rajkot

Teaching block

No. of Storeys	=	G+5		
Area of block	=	22500	sqm	
Ground Floor Area	=	3800	sqm	
First floor to fifth floor (each floor 3740 Sqm)		18700	sqm	
Larger Module Area (35% of Area of		7875	sqm	
Floor Height	=	4.20	mts	(G+5)

Ref DPAR 2012 item	Description	Area / Qty	Unit	Rate	Amount
1.0 (A)	**(A) RCC Framed structure**				
1.1 (A)	RCC Framed Structure Upto Six Storeys				
1.1.1 (A)	Floor Height 3.35 mts	22500.00	sqm	23500.00	528,750,000.00
				Total Cost	**528,750,000.00**
1.0 (B)	**(A) RCC Framed structure (Normal Building)**				
1.1 (B)	RCC Framed Structure Upto Six Storeys				
1.1.1 (B)	Floor Height 3.35 mts	22500.00	sqm	19000.00	427,500,000.00
1.2	**Extra for**				
1.2.3	Every 0.3mt. Additional height of floor above normal floor height of 3.35mts / 2.90 mts (4.2 -3.35=0.85/0.3)	22500.00	sqm	765.00	17,212,500.00
1.2.8	Resisting Earthquake forces	22500.00	sqm	1140.00	25,650,000.00
1.2.9	RCC Raft foundation (GF area only)	3800.00	sqm	6450.00	24,510,000.00
1.2.12	Larger modules over 33 Sqm. (applicable area) 35% of Total Covered Area	7875.00	sqm	1500.00	11,812,500.00
1.4	**Fire fighting**				
1.4.2	With sprinkler system	22500.00	sqm	750.00	16,875,000.00
1.5	**Fire Alarm System**				

Ref DPAR 2012 item	Description	Area / Qty	Unit	Rate	Amount
1.5.2	Automatic Fire Alarm System	22500.00	sqm	500.00	11,250,000.00
	Total SH 1				**636,060,000.00**
3.0	**Services**				
3.1	Internal Water Supply & Sanitary Installation @ 4% on normal building	427,500,000.00		4%	17,100,000.00
3.2	External Service Connection @ 5% on normal building	427,500,000.00		5%	21,375,000.00
3.3	Internal Electric Installation @ 12.5% on normal building	427,500,000.00		12.50%	53,437,500.00
3.6	**Extra for**				
3.6.1	Power Wiring and Plugs @ 4% on normal building	427,500,000.00		4%	17,100,000.00
3.6.2	Central call belll system @1%	427,500,000.00		1%	4,275,000.00
3.6.3	**Lightening conductors**				
3.6.3.2	5 to 8 storeys buildings @0.33% on normal building	427,500,000.00		0.33%	1,410,750.00
3.6.4	Telephone conduits @ 0.5% on normal building	427,500,000.00		0.50%	2,137,500.00
3.6.6	Computer Conduiting @ 0.5% on normal building	427,500,000.00		0.50%	2,137,500.00
3.6.7	Quality Assurance@ 1% on normal building	427,500,000.00		1.00%	4,275,000.00
	Total SH 2				**118,973,250.00**
4	**LIFTS**				
4.1	Passanger Lift				
4.1.3	Capacity/Person = 13 Weight = 884 Kgs. Speed in M/Sec= 1.0 M/Sec Travel= G+4 Doors= Power Operated Control= ACV VVF	6	Each	2200000.00	13,200,000.00
	Additional one floor Floor	6	Each	125000.00	750,000.00
	Total SH 3				**13,950,000.00**

Ref DPAR 2012 item	Description	Area / Qty	Unit	Rate	Amount
	Total Cost as on 1.10.2012	**[I]**		**I= SH(1+2+3)**	**768,983,250.00**
	Add Cost Index @ 112% on CPWD PAR 2012 effective from 1-07-2018	**[II]**		768,983,250.00	**92,277,990.00**
	TOTAL COST AS PER CPWD PAR' 2012 AFTER ADDING COST INDEX				**861,261,240.00**

CONSTRUCTION OF AIIMS Rajkot

Auditorium

No. of Storeys	=	G+1		
Area of block	=	2500	sqm	
Ground Floor Area	=	2000	sqm	
Larger Module Area (35% of Area of Main Block)		875	sqm	
Floor Height	=	7.50	mts	(G)

Ref DPAR 2012 item	Description	Area / Qty	Unit	Rate	Amount
1.0 (A)	**(A) RCC Framed structure**				
1.1 (A)	RCC Framed Structure Upto Six Storeys				
1.1.1 (A)	Floor Height 3.35 mts	2500.00	sqm	23500.00	58,750,000.00
				Total Cost	**58,750,000.00**
1.0 (B)	**(A) RCC Framed structure (Normal Building)**				
1.1 (B)	RCC Framed Structure Upto Six Storeys				
1.1.1 (B)	Floor Height 3.35 mts	2500.00	sqm	19000.00	47,500,000.00
1.2	**Extra for**				
1.2.3	Every 0.3mt. Additional height of floor above normal floor height of 3.35mts / 2.90 mts (All floor height is 7.50m) 7.5-3.35=4.15/0.3	2000.00	sqm	3735.00	7,470,000.00
1.28	Resisting Earthquake forces	2500.00	sqm	1140.00	2,850,000.00
1.2.12	Larger modules over 35 Sqm. (applicable area)	2000.00	sqm	1500.00	3,000,000.00
1.4	**Fire fighting (Served area only)**				
1.4.2	With sprinkler system	2500.00	sqm	750.00	1,875,000.00
1.5	**Fire Alarm System (Served area only)**				
1.5.2	Automatic Fire Alarm System	2500.00	sqm	500.00	1,250,000.00

Ref DPAR 2012 item	Description	Area / Qty	Unit	Rate	Amount
	Total SH 1				**75,195,000.00**
3.0	**Services**				
3.1	Internal Water Supply & Sanitary Installation @ 4% on normal building	47,500,000.00		4%	1,900,000.00
3.2	External Service Connection @ 5% on normal building	47,500,000.00		5%	2,375,000.00
3.3	Internal Electric Installation @ 12.5% on normal building	47,500,000.00		12.50%	5,937,500.00
3.6	**Extra for**				
3.6.1	Power Wiring and Plugs @ 4% on normal building	47,500,000.00		4%	1,900,000.00
3.6.4	Telephone conduits @ 0.5% on normal building	47,500,000.00		0.50%	237,500.00
3.6.6	Computer Conduiting @ 0.5% on normal building	47,500,000.00		0.50%	237,500.00
3.6.7	Quality Assurance@ 1% on normal building	47,500,000.00		1.00%	475,000.00
	Total SH 2				**13,062,500.00**
	Total Cost as on 1.10.2012	**[I]**		**I= SH(1+2)**	**88,257,500.00**
	Add Cost Index @ 112% on CPWD PAR 2012 effective from 1-07-2018	**[II]**		88,257,500.00	**10,590,900.00**
	TOTAL COST AS PER CPWD PAR' 2012 AFTER ADDING COST INDEX				**98,848,400.00**

CONSTRUCTION OF AIIMS Rajkot

Animal House

No. of Storeys = G
Area of block = 200 sqm
Ground Floor Area = 200 sqm
Larger Module Area (35% of Area of Main Block) 70 sqm
Floor Height = 3.90 mts (G)

Ref DPAR 2012 item	Description	Area / Qty	Unit	Rate	Amount
1.0 (A)	**(A) RCC Framed structure**				
1.1 (A)	RCC Framed Structure Upto Six Storeys				
1.1.1 (A)	Floor Height 3.35 mts	200.00	sqm	23500.00	4,700,000.00
				Total Cost	**4,700,000.00**
1.0 (B)	**(A) RCC Framed structure (Normal Building)**				
1.1 (B)	RCC Framed Structure Upto Six Storeys				
1.1.1 (B)	Floor Height 3.35 mts	200.00	sqm	19000.00	3,800,000.00
1.2	**Extra for**				
1.2.3	Every 0.3mt. Additional height of floor above normal floor height of 3.35mts / 2.90 mts (3.9-3.35=0.55/0.3)	200.00	sqm	495.00	99,000.00
1.28	Resisting Earthquake forces	200.00	sqm	1140.00	228,000.00
1.4	**Fire fighting (Served area only)**				
1.4.2	With wet riser system	200.00	sqm	500.00	100,000.00
1.5	**Fire Alarm System (Served area only)**				
1.5.2	Automatic Fire Alarm System	200.00	sqm	500.00	100,000.00
	Total SH 1				**5,227,000.00**
3.0	**Services**				
3.1	Internal Water Supply & Sanitary Installation @ 10% on normal building	3,800,000.00		10%	380,000.00

Ref DPAR 2012 item	Description	Area / Qty	Unit	Rate	Amount
3.2	External Service Connection @ 5% on normal building	3,800,000.00		5%	190,000.00
3.3	Internal Electric Installation @ 12.5% on normal building	3,800,000.00		12.50%	475,000.00
3.6	**Extra for**				
3.6.1	Power Wiring and Plugs @ 4% on normal building	3,800,000.00		4%	152,000.00
3.6.4	Telephone conduits @ 0.5% on normal building	3,800,000.00		0.50%	19,000.00
3.6.6	Computer Conduiting @ 0.5% on normal building	3,800,000.00		0.50%	19,000.00
3.6.7	Quality Assurance@ 1% on normal building	3,800,000.00		1.00%	38,000.00
	Total SH 2				**1,273,000.00**
	Total Cost as on 1.10.2012	**[I]**		**I= SH(1+2)**	**6,500,000.00**
	Add Cost Index @ 112% on CPWD PAR 2012 effective from 1-07-2018	**[II]**		6,500,000.00	**780,000.00**
	TOTAL COST AS PER CPWD PAR' 2012 AFTER ADDING COST INDEX				**7,280,000.00**

CONSTRUCTION OF AIIMS Rajkot

Service block including Fire station, Guard rooms & solid waste management

No. of Storeys = G+1
Area of block = 2800 sqm
Ground Floor Area = 1800 sqm
Larger Module Area (35% of Area of Main Block) 980 sqm
Floor Height = 5.00 mts

Ref DPAR 2012 item	Description	Area / Qty	Unit	Rate	Amount
1.0 (A)	**(A) RCC Framed structure**				
1.1 (A)	RCC Framed Structure Upto Six Storeys				
1.1.2 (A)	Floor Height 2.9mts	2800.00	sqm	16000.00	44,800,000.00
				Total Cost	**44,800,000.00**
1.0 (B)	**(A) RCC Framed structure (Normal Building)**				
1.1 (B)	RCC Framed Structure Upto Six Storeys				
1.1.2 (B)	Floor Height 2.9 mts	2800	sqm	14500.00	40,600,000.00
1.2	**Extra for**				
1.2.3	Every 0.3mt. Additional height of floor above normal floor height of 3.35mts / 2.90 mts 5-2.90 =2.10/0.3	2800.00	sqm	1890.00	5,292,000.00
1.28	Resisting Earthquake forces	2800.00	sqm	1140.00	3,192,000.00
1.2.12	Larger modules over 35 Sqm. (applicable area) 35% of Total Covered Area	980	sqm	1500.00	1,470,000.00
1.4	**Fire fighting (Served area only)**				
1.4.2	With wet riser system	2800.00	sqm	500.00	1,400,000.00
1.5	**Fire Alarm System (Served area only)**				
1.5.2	Automatic Fire Alarm System	2800.00	sqm	500.00	1,400,000.00
	Total SH 1				**57,554,000.00**

Ref DPAR 2012 item	Description	Area / Qty	Unit	Rate	Amount
3.0	**Services**				
3.1	Internal Water Supply & Sanitary Installation @ 10% on normal building	40,600,000.00		10%	4,060,000.00
3.2	External Service Connection @ 5% on normal building	40,600,000.00		5%	2,030,000.00
3.3	Internal Electric Installation @ 12.5% on normal building	40,600,000.00		12.50%	5,075,000.00
3.6	**Extra for**				
3.6.3.1	Lightening arrestor upto 4 storey @ 0.5% on normal building	40,600,000.00		0.50%	203,000.00
3.6.4	Telephone conduits @ 0.5% on normal building	40,600,000.00		0.50%	203,000.00
3.6.7	Quality Assurance@ 1% on normal building	40,600,000.00		1.00%	406,000.00
	Total SH 2				**11,977,000.00**
	Total Cost as on 1.10.2012	**[I]**		**I= SH(1+2)**	**69,531,000.00**
	Add Cost Index @ 112% on CPWD PAR 2012 effective from 1-07-2018	**[II]**		69,531,000.00	**8,343,720.00**
	TOTAL COST AS PER CPWD PAR' 2012 AFTER ADDING COST INDEX				**77,874,720.00**

CONSTRUCTION OF AIIMS Rajkot

Night Shelter

No. of Storeys	=	G+3		
Area of block	=	3700	sqm	
Ground Floor Area	=	925	sqm	
First & second floor area (925x3)		2775	sqm	
Larger Module Area (35% of Area of Main Block)		1295	sqm	
Floor Height	=	3.15	mts	(G+3)

Ref DPAR 2012 item	Description	Area / Qty	Unit	Rate	Amount
1.0 (A)	**(A) RCC Framed structure**				
1.1 (A)	RCC Framed Structure Upto Six Storeys				
1.1.2 (A)	Floor Height 3.35 mts	3700.00	sqm	16000.00	59,200,000.00
				Total Cost	**59,200,000.00**
1.0 (B)	**(A) RCC Framed structure (Normal Building)**				
1.1 (B)	RCC Framed Structure Upto Six Storeys				
1.1.2 (B)	Floor Height 2.9 mts	3700.00	sqm	14500.00	53,650,000.00
1.2	**Extra for**				
1.2.3	Every 0.3mt. Additional height of floor above normal floor height of 3.35mts / 2.90 mts (3.15-2.9=0.25/0.3)	3700.00	sqm	225.00	832,500.00
1.2.8	Resisting Earthquake forces	3700.00	sqm	1140.00	4,218,000.00
1.2.9	RCC Raft foundation (GF area only)	925.00	sqm	6450.00	5,966,250.00
1.4	**Fire fighting (Served area only)**				
1.4.2	With wet riser system	3700.00	sqm	500.00	1,850,000.00
1.5	**Fire Alarm System (Served area only)**				
1.5.1	Manual Fire Alarm System	3700.00	sqm	500.00	1,850,000.00
	Total SH 1				**73,916,750.00**

Ref DPAR 2012 item	Description	Area / Qty	Unit	Rate	Amount
3.0	**Services**				
3.1	Internal Water Supply & Sanitary Installation @ 10% on normal building	53,650,000.00		10%	5,365,000.00
3.2	External Service Connection @ 5% on normal building	53,650,000.00		5%	2,682,500.00
3.3	Internal Electric Installation @ 12.5% on normal building	53,650,000.00		12.50%	6,706,250.00
3.6	**Extra for**				
3.6.3.1	Lightening arrestor upto 4 storey @ 0.5% on normal building	53,650,000.00		0.50%	268,250.00
3.6.4	Telephone conduits @ 0.5% on normal building	53,650,000.00		0.50%	268,250.00
3.6.6	Computer Conduiting @ 0.5% on normal building	53,650,000.00		0.50%	268,250.00
3.6.7	Quality Assurance@ 1% on normal building	53,650,000.00		1.00%	536,500.00
	Total SH 2				**16,095,000.00**
4	**LIFTS**				
4.1	Passanger Lift				
4.1.1	Capacity/Person = 8 Weight = 544 Kgs. Speed in M/Sec= 1.0 M/Sec Travel= G+4 Doors= Power Operated Control= ACV VVF	1	Each	1800000.00	1,800,000.00
	Total SH 3				**1,800,000.00**
	Total Cost as on 1.10.2012	**[I]**		**I= SH(1+2+3)**	**91,811,750.00**
	Add Cost Index @ 112% on CPWD PAR 2012 effective from 1-07-2018	**[II]**		91,811,750.00	**11,017,410.00**
	TOTAL COST AS PER CPWD PAR' 2012 AFTER ADDING COST INDEX				**102,829,160.00**

CONSTRUCTION OF AIIMS Rajkot

Guest House

No. of Storeys = G+2
Area of block = 650 sqm
Ground Floor Area = 230 sqm
First & second floor area (210x2) 420 sqm
Floor Height = 3.15 mts (G+2)

Ref DPAR 2012 item	Description	Area / Qty	Unit	Rate	Amount
1.0 (A)	**(A) RCC Framed structure**				
1.1 (A)	RCC Framed Structure Upto Six Storeys				
1.1.2 (A)	Floor Height 2.9 mts	650.00	sqm	16000.00	10,400,000.00
				Total Cost	**10,400,000.00**
1.0 (B)	**(A) RCC Framed structure (Normal Building)**				
1.1 (B)	RCC Framed Structure Upto Six Storeys				
1.1.2 (B)	Floor Height 2.9 mts	650.00	sqm	14500.00	9,425,000.00
1.2	**Extra for**				
1.2.3	Every 0.3mt. Additional height of floor above normal floor height of 3.35mts / 2.90 mts 3.15-2.9=0..25/0.3	650.00	sqm	225.00	146,250.00
1.2.8	Resisting Earthquake forces	650.00	sqm	1140.00	741,000.00
1.4	**Fire fighting (Served area only)**				
1.4.2	With wet riser system	650.00	sqm	500.00	325,000.00
1.5	**Fire Alarm System (Served area only)**				
1.5.1	Manual Fire Alarm System	650.00	sqm	500.00	325,000.00
	Total SH 1				**11,937,250.00**
3.0	**Services**				
3.1	Internal Water Supply & Sanitary Installation @ 10% on normal building	9,425,000.00		10%	942,500.00

Ref DPAR 2012 item	Description	Area / Qty	Unit	Rate	Amount
3.2	External Service Connection @ 5% on normal building	9,425,000.00		5%	471,250.00
3.3	Internal Electric Installation @ 12.5% on normal building	9,425,000.00		12.50%	1,178,125.00
3.6	**Extra for**				
3.6.3.1	Lightening arrestor upto 4 storey @ 0.5% on normal building	9,425,000.00		0.50%	47,125.00
3.6.4	Telephone conduits @ 0.5% on normal building	9,425,000.00		0.50%	47,125.00
3.6.5	Centralised intercom system @ 1% of normal building	9,425,000.00		1.00%	94,250.00
3.6.6	Computer Conduiting @ 0.5% on normal building	9,425,000.00		0.50%	47,125.00
3.6.7	Quality Assurance@ 1% on normal building	9,425,000.00		1.00%	94,250.00
	Total SH 2				**2,921,750.00**
4	**LIFTS**				
4.1	Passanger Lift				
4.1.1	Capacity/Person = 8 Weight = 544 Kgs. Speed in M/Sec= 1.0 M/Sec Travel= G+4 Doors= Power Operated Control= ACV VVF	1	Each	1800000.00	1,800,000.00
	Total SH 3				**1,800,000.00**
	Total Cost as on 1.10.2012	**[I]**		**I= SH(1+2+3)**	**16,659,000.00**
	Add Cost Index @ 112% on CPWD PAR 2012 effective from 1-07-2018	**[II]**		16,659,000.00	**1,999,080.00**
	TOTAL COST AS PER CPWD PAR' 2012 AFTER ADDING COST INDEX				**18,658,080.00**

CONSTRUCTION OF AIIMS Rajkot

Director's bunglow

No. of Storeys	=	G+1		
Area of block	=	380	sqm	
Ground Floor Area	=	190	sqm	
First floor area		190	sqm	
Floor Height	=	3.15	mts	(G+1)

Ref DPAR 2012 item	Description	Area / Qty	Unit	Rate	Amount
1.0 (A)	**(A) RCC Framed structure**				
1.1 (A)	RCC Framed Structure Upto Six Storeys				
1.1.2 (A)	Floor Height 2.9mts	380.00	sqm	16000.00	6,080,000.00
				Total Cost	**6,080,000.00**
1.0 (B)	**(A) RCC Framed structure (Normal Building)**				
1.1 (B)	RCC Framed Structure Upto Six Storeys				
1.1.2 (B)	Floor Height 2.9 mts	380.00	sqm	14500.00	5,510,000.00
1.2	**Extra for**				
1.2.3	Every 0.3mt. Additional height of floor above normal floor height of 3.35mts / 2.90 mts 3.15-2.9=0.25/0.3	380.00	sqm	225.00	85,500.00
1.2.8	Resisting Earthquake forces	380.00	sqm	1140.00	433,200.00
	Total SH 1				**6,598,700.00**
3.0	**Services**				
3.1	Internal Water Supply & Sanitary Installation @ 12% on normal building	5,510,000.00		12%	661,200.00
3.2	External Service Connection @ 5% on normal building	5,510,000.00		5%	275,500.00
3.3	Internal Electric Installation @ 12.5% on normal building	5,510,000.00		12.50%	688,750.00
3.6	**Extra for**				
3.6.3.1	Lightening arrestor upto 4 storey @ 0.5% on normal building	5,510,000.00		0.50%	27,550.00

Ref DPAR 2012 item	Description	Area / Qty	Unit	Rate	Amount
3.6.4	Telephone conduits @ 0.5% on normal building	5,510,000.00		0.50%	27,550.00
3.6.5	Centralised intercom system @ 1% of normal building	5,510,000.00		1.00%	55,100.00
3.6.7	Quality Assurance@ 1% on normal building	5,510,000.00		1.00%	55,100.00
	Total SH 2				**1,790,750.00**
	Total Cost as on 1.10.2012	**[I]**		**I= SH(1+2)**	**8,389,450.00**
	Add Cost Index @ 112% on CPWD PAR 2012 effective from 1-07-2018	**[II]**		8,389,450.00	**1,006,734.00**
	TOTAL COST AS PER CPWD PAR' 2012 AFTER ADDING COST INDEX				**9,396,184.00**

CONSTRUCTION OF AIIMS Rajkot

Type-6 (6 Block of 1 units each)

No. of Storeys	=	G+1		
Area of block	=	1620	sqm	
Ground Floor Area	=	810	sqm	
First floor area		810	sqm	
Floor Height	=	3.15	mts	(G+1)

Ref DPAR 2012 item	Description	Area / Qty	Unit	Rate	Amount
1.0 (A)	**(A) RCC Framed structure**				
1.1 (A)	RCC Framed Structure Upto Six Storeys				
1.1.2 (A)	Floor Height 2.9mts	1620.00	sqm	16000.00	25,920,000.00
				Total Cost	**25,920,000.00**
1.0 (B)	**(A) RCC Framed structure (Normal Building)**				
1.1 (B)	RCC Framed Structure Upto Six Storeys				
1.1.2 (B)	Floor Height 2.9 mts	1620.00	sqm	14500.00	23,490,000.00
1.2	**Extra for**				
1.2.3	Every 0.3mt. Additional height of floor above normal floor height of 3.35mts / 2.90 mts 3.15-2.9=0.25/0.3	1620.00	sqm	225.00	364,500.00
1.2.8	Resisting Earthquake forces	1620.00	sqm	1140.00	1,846,800.00
1.4	**Fire fighting (Served area only)**				
1.4.2	With wet riser system	1620.00	sqm	500.00	810,000.00
1.5	**Fire Alarm System (Served area only)**				
1.5.1	Manual Fire Alarm System	1620.00	sqm	500.00	810,000.00
	Total SH 1				**29,751,300.00**
3.0	**Services**				
3.1	Internal Water Supply & Sanitary Installation @ 12% on normal building	23,490,000.00		12%	2,818,800.00

Ref DPAR 2012 item	Description	Area / Qty	Unit	Rate	Amount
3.2	External Service Connection @ 5% on normal building	23,490,000.00		5%	1,174,500.00
3.3	Internal Electric Installation @ 12.5% on normal building	23,490,000.00		12.50%	2,936,250.00
3.6	**Extra for**				
3.6.3.1	Lightening arrestor upto 4 storey @ 0.5% on normal building	23,490,000.00		0.50%	117,450.00
3.6.4	Telephone conduits @ 0.5% on normal building	23,490,000.00		0.50%	117,450.00
3.6.5	Centralised intercom system @ 1% of normal building	23,490,000.00		1.00%	234,900.00
3.6.7	Quality Assurance@ 1% on normal building	23,490,000.00		1.00%	234,900.00
	Total SH 2				**7,634,250.00**
	Total Cost as on 1.10.2012	**[I]**		**I= SH(1+2)**	**37,385,550.00**
	Add Cost Index @ 112% on CPWD PAR 2012 effective from 1-07-2018	**[II]**		37,385,550.00	**4,486,266.00**
	TOTAL COST AS PER CPWD PAR' 2012 AFTER ADDING COST INDEX				**41,871,816.00**

CONSTRUCTION OF AIIMS Rajkot

Type-5 (1 Block of 24units each)

No. of Storeys = G+5
Area of block = 4920 sqm
Ground Floor Area = 820 sqm
First floor to 5th floor (820x5) 4100 sqm
Floor Height = 3.15 mts (G+5)

Ref DPAR 2012 item	Description	Area / Qty	Unit	Rate	Amount
1.0 (A)	**(A) RCC Framed structure**				
1.1 (A)	RCC Framed Structure Upto Six Storeys				
1.1.2 (A)	Floor Height 2.9mts	4920.00	sqm	16000.00	78,720,000.00
				Total Cost	**78,720,000.00**
1.0 (B)	**(A) RCC Framed structure (Normal Building)**				
1.1 (B)	RCC Framed Structure Upto Six Storeys				
1.1.2 (B)	Floor Height 2.9 mts	4920.00	sqm	14500.00	71,340,000.00
1.2.8	Resisting Earthquake forces	4920.00	sqm	1140.00	5,608,800.00
1.2	**Extra for**				
1.2.3	Every 0.3mt. Additional height of floor above normal floor height of 3.35mts / 2.90 mts 3.15-2.9=0.25/0.3	4920.00	sqm	225.00	1,107,000.00
1.2.6	Making stronger foundation for taking addl. Floor load of one additional floor at later date (addl. Floorarea only - 2 addl. floor)	1640	sqm	2270.00	3,722,800.00
1.2.8	Resisting Earthquake forces	3.15	sqm	1140.00	3,591.00
1.2.9	RCC Raft foundation (GF area only)	820.00	sqm	6450.00	5,289,000.00
1.4	**Fire fighting**				
1.4.1	With wet riser system	4920.00	sqm	500.00	2,460,000.00

Ref DPAR 2012 item	Description	Area / Qty	Unit	Rate	Amount
1.5	**Fire Alarm System**				
1.5.1	Manual Fire Alarm System	4920.00	sqm	300.00	1,476,000.00
	Total SH 1				**98,387,191.00**
3.0	**Services**				
3.1	Internal Water Supply & Sanitary Installation @ 12% on normal building	71,340,000.00		12%	8,560,800.00
3.2	External Service Connection @ 5% on normal building	71,340,000.00		5%	3,567,000.00
3.3	Internal Electric Installation @ 12.5% on normal building	71,340,000.00		12.50%	8,917,500.00
3.6	**Extra for**				
	Lightening conductors				
3.6.3.2	5 to 8 storeys buildings @0.33% on normal building	71,340,000.00		0.33%	235,422.00
3.6.4	Telephone conduits @ 0.5% on normal building	71,340,000.00		0.50%	356,700.00
3.6.5	Centralised intercom system @ 1% of normal building	71,340,000.00		1.00%	713,400.00
3.6.7	Quality Assurance@ 1% on normal building	71,340,000.00		1.00%	713,400.00
	Total SH 2				**23,064,222.00**
4	**LIFTS**				
4.1	Passanger Lift				
4.1.1	Capacity/Person = 8 Weight = 544 Kgs. Speed in M/Sec= 1.0 M/Sec Travel= G+4 Doors= Power Operated Control= ACV VVF	2	Each	1800000.00	3,600,000.00
	Additional one floor Floor	2	Each	125000.00	250,000.00
	Total SH 3				**3,850,000.00**
	Total Cost as on 1.10.2012	**[I]**		**I= SH(1+2+3)**	**125,301,413.00**
	Add Cost Index @ 112% on CPWD PAR 2012 effective from 1-07-2018	**[II]**		125,301,413.00	**15,036,169.56**
	TOTAL COST AS PER CPWD PAR' 2012 AFTER ADDING COST INDEX				**140,337,582.56**

CONSTRUCTION OF AIIMS Rajkot

Type-4 (1 Blocks of 21 units each)

No. of Storeys	=	G+5		
Area of block	=	3150	sqm	
Ground Floor Area	=	525	sqm	
First floor to 5th floor (525x5)		2625	sqm	
Floor Height	=	3.15	mts	(G+5)

Ref DPAR 2012 item	Description	Area / Qty	Unit	Rate	Amount
1.0 (A)	**(A) RCC Framed structure**				
1.1 (A)	RCC Framed Structure Upto Six Storeys				
1.1.2 (A)	Floor Height 2.9mts	3150	sqm	16000.00	50,400,000.00
				Total Cost	**50,400,000.00**
1.0 (B)	**(A) RCC Framed structure (Normal Building)**				
1.1 (B)	RCC Framed Structure Upto Six Storeys				
1.1.2 (B)	Floor Height 2.9 mts	3150	sqm	14500.00	45,675,000.00
1.2	**Extra for**				
1.2.3	Every 0.3mt. Additional height of floor above normal floor height of 3.35mts / 2.90 mts 3.15-2.9=0.25/0.3	3150	sqm	225.00	708,750.00
1.2.6	Making stronger foundation for taking addl. Floor load of one additional floor at later date (addl. Floorarea only - 2 addl. floor)	1050	sqm	2270.00	2,383,500.00
1.2.8	Resisting Earthquake forces	3150.00	sqm	1140.00	3,591,000.00
1.2.9	RCC Raft foundation (GF area only)	525.00	sqm	6450.00	3,386,250.00
1.4	**Fire fighting**				
1.4.1	With wet riser system	3150.00	sqm	500.00	1,575,000.00
1.5	**Fire Alarm System**				

Ref DPAR 2012 item	Description	Area / Qty	Unit	Rate	Amount
1.5.1	Manual Fire Alarm System	3150.00	sqm	300.00	945,000.00
	Total SH 1				**62,989,500.00**
3.0	**Services**				
3.1	Internal Water Supply & Sanitary Installation @ 12% on normal building	45,675,000.00		12%	5,481,000.00
3.2	External Service Connection @ 5% on normal building	45,675,000.00		5%	2,283,750.00
3.3	Internal Electric Installation @ 12.5% on normal building	45,675,000.00		12.50%	5,709,375.00
3.6	**Extra for**				
	Lightening conductors				
3.6.3.2	5 to 8 storeys buildings @0.33% on normal building	45,675,000.00		0.33%	150,727.50
3.6.4	Telephone conduits @ 0.5%	45,675,000.00		0.50%	228,375.00
3.6.5	Centralised intercom system @ 1% of normal building	45,675,000.00		1.00%	456,750.00
3.6.7	Quality Assurance@ 1%	45,675,000.00		1.00%	456,750.00
	Total SH 2				**14,766,727.50**
4	**LIFTS**				
4.1	Passanger Lift				
4.1.1	Capacity/Person = 8 Weight = 544 Kgs. Speed in M/Sec= 1.0 M/Sec Travel= G+4 Doors= Power Operated Control= ACV VVF	2	Each	1800000.00	3,600,000.00
	Additional one floor Floor	2	Each	125000.00	250,000.00
	Total SH 3				**3,850,000.00**
	Total Cost as on 1.10.2012	**[I]**		**I= SH(1+2+3)**	**81,606,227.50**
	Add Cost Index @ 112% on CPWD PAR 2012 effective from 1-07-2018	**[II]**		81,606,227.50	**9,792,747.30**
	TOTAL COST AS PER CPWD PAR' 2012 AFTER ADDING COST INDEX				**91,398,974.80**

CONSTRUCTION OF AIIMS Rajkot

Type-3 (1 Blocks of 18 units each)

No. of Storeys = G+2
Area of block = 1440 sqm
Ground Floor Area = 480 sqm
First floor to 2nd floor (480x2) 960 sqm
Floor Height = 3.15 mts (G+2)

Ref DPAR 2012 item	Description	Area / Qty	Unit	Rate	Amount
1.0 (A)	**(A) RCC Framed structure**				
1.1 (A)	RCC Framed Structure Upto Six Storeys				
1.1.2 (A)	Floor Height 2.9mts	1440.00	sqm	16000.00	23,040,000.00
				Total Cost	**23,040,000.00**
1.0 (B)	**(A) RCC Framed structure (Normal Building)**				
1.1 (B)	RCC Framed Structure Upto Six Storeys				
1.1.2 (B)	Floor Height 2.9 mts	1440.00	sqm	14500.00	20,880,000.00
1.2	**Extra for**				
1.2.3	Every 0.3mt. Additional height of floor above normal floor height of 3.35mts / 2.90 mts (3.15-2.9=0.25/0.3)	1440.00	sqm	225.00	324,000.00
1.2.8	Resisting Earthquake forces	1440.00	sqm	1140.00	1,641,600.00
1.2.9	RCC Raft foundation (GF area only)	480.00	sqm	6450.00	3,096,000.00
1.4	**Fire fighting (Served area only)**				
1.4.1	With wet riser system	1440.00	sqm	500.00	720,000.00
1.5	**Fire Alarm System (Served area only)**				
1.5.1	Manual Fire Alarm System	1440.00	sqm	300.00	432,000.00
	Total SH 1				**29,253,600.00**
3.0	**Services**				

Ref DPAR 2012 item	Description	Area / Qty	Unit	Rate	Amount
3.1	Internal Water Supply & Sanitary Installation @ 12% on normal building	20,880,000.00		12%	2,505,600.00
3.2	External Service Connection @ 5% on normal building	20,880,000.00		5%	1,044,000.00
3.3	Internal Electric Installation @ 12.5% on normal building	20,880,000.00		12.50%	2,610,000.00
3.6	**Extra for**				
3.6.3	**Lightening conductors**				
3.6.3.1	Lightening arrestor upto 4 storey @ 0.5% on normal building	20,880,000.00		0.50%	104,400.00
3.6.4	Telephone conduits @ 0.5%	20,880,000.00		0.50%	104,400.00
3.6.5	Centralised intercom system @ 1% of normal building	20,880,000.00		1.00%	208,800.00
3.6.7	Quality Assurance@ 1%	20,880,000.00		1.00%	208,800.00
	Total SH 2				**6,786,000.00**
y	**LIFTS**				
4.1	Passanger Lift				
4.1.8	Capacity/Person = 8 Weight = 544 Kgs. Speed in M/Sec= 1.0 M/Sec Travel= G+4 Doors= Power Operated Control= ACV VVF	1	Each	1800000.00	1,800,000.00
	Total SH 3				**1,800,000.00**
	Total Cost as on 1.10.2012	**[I]**		**I= SH(1+2+3)**	**37,839,600.00**
	Add Cost Index @ 112% on CPWD PAR 2012 effective from 1-07-2018	**[II]**		37,839,600.00	**4,540,752.00**
	TOTAL COST AS PER CPWD PAR' 2012 AFTER ADDING COST INDEX				**42,380,352.00**

CONSTRUCTION OF AIIMS Rajkot

Type-2 (3 BLOCK OF 36 UNITS EACH)

No. of Storeys = G+5
Area of block = 7560 sqm
Ground Floor Area = 1260 sqm
First floor to 5th floor (1260x5) 6300 sqm
Floor Height = 3.15 mts (G+5)

Ref DPAR 2012 item	Description	Area / Qty	Unit	Rate	Amount
1.0 (A)	**(A) RCC Framed structure**				
1.1 (A)	RCC Framed Structure Upto Six Storeys				
1.1.2 (A)	Floor Height 2.9mts	7560.00	sqm	16000.00	120,960,000.00
				Total Cost	**120,960,000.00**
1.0 (B)	**(A) RCC Framed structure (Normal Building)**				
1.1 (B)	RCC Framed Structure Upto Six Storeys				
1.1.2 (B)	Floor Height 2.9 mts	7560	sqm	14500.00	109,620,000.00
1.2	**Extra for**				
1.2.3	Every 0.3mt. Additional height of floor above normal floor height of 3.35mts / 2.90 mts (3.15-2.9=0.25/0.3)	7560	sqm	225.00	1,701,000.00
1.2.6	Making stronger foundation for taking addl. Floor load of one additional floor at later date (addl. Floorarea only)	1260	sqm	2270.00	2,860,200.00
1.2.8	Resisting Earthquake forces	7560.00	sqm	1140.00	8,618,400.00
1.2.9	RCC Raft foundation (GF area only)	1260.00	sqm	6450.00	8,127,000.00
1.4	**Fire fighting**				
1.4.1	With wet riser system	7560.00	sqm	500.00	3,780,000.00
1.5	**Fire Alarm System**				
1.5.1	Manual Fire Alarm System	7560.00	sqm	500.00	3,780,000.00

Ref DPAR 2012 item	Description	Area / Qty	Unit	Rate	Amount
	Total SH 1				**149,826,600.00**
3.0	**Services**				
3.1	Internal Water Supply & Sanitary Installation @ 12% on normal building	109,620,000.00		12%	13,154,400.00
3.2	External Service Connection @ 5% on normal building	109,620,000.00		5%	5,481,000.00
3.3	Internal Electric Installation @ 12.5% on normal building	109,620,000.00		12.50%	13,702,500.00
3.6	**Extra for**				
3.6.3	**Lightening conductors**				
3.6.3.2	5 to 8 storeys buildings @0.33% on normal building	109,620,000.00		0.33%	361,746.00
3.6.4	Telephone conduits @ 0.5% on normal building	109,620,000.00		0.50%	548,100.00
3.6.5	Centralised intercom system @ 1% of normal building	109,620,000.00		1.00%	1,096,200.00
3.6.7	Quality Assurance@ 1% on normal building	109,620,000.00		1.00%	1,096,200.00
	Total SH 2				**35,440,146.00**
y	**LIFTS**				
4.1	Passanger Lift				
4.1.8	Capacity/Person = 8 Weight = 544 Kgs. Speed in M/Sec= 1.0 M/Sec Travel= G+4 Doors= Power Operated Control= ACV VVF	2	Each	1800000.00	3,600,000.00
	Additional Price for each additional Floor	2	Each	125000.00	250,000.00
	Total SH 3				**3,850,000.00**
	Total Cost as on 1.10.2012	**[I]**		**I= SH(1+2+3)**	**189,116,746.00**
	Add Cost Index @ 112% on CPWD PAR 2012 effective from 1-07-2018	**[II]**		189,116,746.00	**22,694,009.52**
	TOTAL COST AS PER CPWD PAR' 2012 AFTER ADDING COST INDEX				**211,810,755.52**

CONSTRUCTION OF AIIMS Rajkot

PG Hostel-D1 type (1 BLOCKS OF 312 CAPACITY EACH)

No. of Storeys = G+5
Area of block = 7400 sqm
Ground Floor Area = 1240 sqm
First floor to 5th floor (1232x5) 6160 sqm
Floor Height = 3.15 mts (G+5)

Ref DPAR 2012 item	Description	Area / Qty	Unit	Rate	Amount
1.0 (A)	**(A) RCC Framed structure**				
1.1 (A)	RCC Framed Structure Upto Six Storeys				
1.1.2 (A)	Floor Height 2.9mts	7400.00	sqm	16500.00	122,100,000.00
				Total Cost	**122,100,000.00**
1.0 (B)	**(A) RCC Framed structure (Normal Building)**				
1.1 (B)	RCC Framed Structure Upto Six Storeys				
1.1.2 (B)	Floor Height 2.9 mts	7400	sqm	15000.00	111,000,000.00
1.2	**Extra for**				
1.2.3	Every 0.3mt. Additional height of floor above normal floor height of 3.35mts / 2.90 mts (3.15-2.9=0.25/0.3)	7400	sqm	225.00	1,665,000.00
1.2.6	Making stronger foundation for taking addl. Floor load of one additional floor at later date (addl. Floorarea only - 2 addl. floor)	2464	sqm	2270.00	5,593,280.00
1.2.8	Resisting Earthquake forces	7400	sqm	1140.00	8,436,000.00
1.2.9	RCC Raft foundation (GF area only)	1240.00	sqm	6450.00	7,998,000.00
1.4	**Fire fighting**				
1.4.1	With wet riser system	7400.00	sqm	500.00	3,700,000.00
1.5	**Fire Alarm System**				
1.5.2	Automatic Fire Alarm System	7400.00	sqm	500.00	3,700,000.00

Ref DPAR 2012 item	Description	Area / Qty	Unit	Rate	Amount
	Total SH 1				**153,192,280.00**
3.0	**Services**				
3.1	Internal Water Supply & Sanitary Installation @ 15% on normal building	111,000,000.00		15%	16,650,000.00
3.2	External Service Connection @ 5% on normal building	111,000,000.00		5%	5,550,000.00
3.3	Internal Electric Installation @ 12.5% on normal building	111,000,000.00		12.50%	13,875,000.00
3.6	**Extra for**				
3.6.3	**Lightening conductors**				
3.6.3.2	5 to 8 storeys buildings @0.33% on normal building	111,000,000.00		0.33%	366,300.00
3.6.4	Telephone conduits @ 0.5% on normal building	111,000,000.00		0.50%	555,000.00
3.6.6	Computer Conduiting @ 0.5% on normal building	111,000,000.00		0.50%	555,000.00
3.6.7	Quality Assurance@ 1% on normal building	111,000,000.00		1.00%	1,110,000.00
	Total SH 2				**38,661,300.00**
4	**LIFTS**				
4.1	Passanger Lift				
4.1.1	Capacity/Person = 8 Weight = 544 Kgs. Speed in M/Sec= 1.0 M/Sec Travel= G+4 Doors= Power Operated Control= ACV VVF	2	Each	1800000.00	3,600,000.00
	Additional one floor Floor	2	Each	125000.00	250,000.00
	Total SH 3				**3,850,000.00**
	Total Cost as on 1.10.2012	**[I]**		**I= SH(1+2+3)**	**195,703,580.00**
	Add Cost Index @ 112% on CPWD PAR 2012 effective from 1-07-2018	**[II]**		195,703,580.00	**23,484,429.60**
	TOTAL COST AS PER CPWD PAR' 2012 AFTER ADDING COST INDEX				**219,188,009.60**

CONSTRUCTION OF AIIMS Rajkot

UG Hostel-girls (For 240 Students)

No. of Storeys = G+5
Area of block = 5750 sqm
Ground Floor Area = 975 sqm
First floor to 5th floor (955x5) 4775 sqm
Floor Height = 3.15 mts (G+5)

Ref DPAR 2012 item	Description	Area / Qty	Unit	Rate	Amount
1.0 (A)	**(A) RCC Framed structure**				
1.1 (A)	RCC Framed Structure Upto Six Storeys				
1.1.2 (A)	Floor Height 2.9mts	5750	sqm	16500.00	94,875,000.00
				Total Cost	**94,875,000.00**
1.0 (B)	**(A) RCC Framed structure (Normal Building)**				
1.1 (B)	RCC Framed Structure Upto Six Storeys				
1.1.2 (B)	Floor Height 2.9 mts	5750	sqm	15000.00	86,250,000.00
1.2	**Extra for**				
1.2.3	Every 0.3mt. Additional height of floor above normal floor height of 3.35mts / 2.90 mts (3.15-2.9=0.25/0.3)	5750	sqm	225.00	1,293,750.00
1.2.6	Making stronger foundation for taking addl. Floor load of one additional floor at later date (addl. Floorarea only - 2 addl. floor)	1910	sqm	2270.00	4,335,700.00
1.2.8	Resisting Earthquake forces	5750	sqm	1140.00	6,555,000.00
1.2.9	RCC Raft foundation (GF area only)	975.00	sqm	6450.00	6,288,750.00
1.4	**Fire fighting**				
1.4.1	With wet riser system	5750.00	sqm	500.00	2,875,000.00
1.5	**Fire Alarm System**				

Ref DPAR 2012 item	Description	Area / Qty	Unit	Rate	Amount
1.5.2	Automatic Fire Alarm System	5750.00	sqm	500.00	2,875,000.00
	Total SH 1				**119,098,200.00**
3.0	**Services**				
3.1	Internal Water Supply & Sanitary Installation @ 10% on normal building	86,250,000.00		15%	12,937,500.00
3.2	External Service Connection @ 5% on normal building	86,250,000.00		5%	4,312,500.00
3.3	Internal Electric Installation @ 12.5% on normal building	86,250,000.00		12.50%	10,781,250.00
3.6	**Extra for**				
3.6.3	**Lightening conductors**				
3.6.3.2	5 to 8 storeys buildings @0.33% on normal building	86,250,000.00		0.33%	284,625.00
3.6.4	Telephone conduits @ 0.5% on normal building	86,250,000.00		0.50%	431,250.00
3.6.6	Computer Conduiting @ 0.5% on normal building	86,250,000.00		0.50%	431,250.00
3.6.7	Quality Assurance@ 1% on normal building	86,250,000.00		1.00%	862,500.00
	Total SH 2				**30,040,875.00**
4	**LIFTS**				
4.1	Passanger Lift				
4.1.1	Capacity/Person = 8 Weight = 544 Kgs. Speed in M/Sec= 1.0 M/Sec Travel= G+4 Doors= Power Operated Control= ACV VVF	2	Each	1800000.00	3,600,000.00
	Additional Price for each additional Floor	2	Each	125000.00	250,000.00
	Total SH 3				**3,850,000.00**
	Total Cost as on 1.10.2012	**[I]**		**I= SH(1+2+3)**	**152,989,075.00**
	Add Cost Index @ 112% on CPWD PAR 2012 effective from 1-07-2018	**[II]**		152,989,075.00	**18,358,689.00**
	TOTAL COST AS PER CPWD PAR' 2012 AFTER ADDING COST INDEX				**171,347,764.00**

CONSTRUCTION OF AIIMS Rajkot

UG Hostel-Boys (For 240 Students)

No. of Storeys = G+5
Area of block = 5750 sqm
Ground Floor Area = 975 sqm
First floor to 5th floor (955x5) 4775 sqm
Floor Height = 3.15 mts (G+5)

Ref DPAR 2012 item	Description	Area / Qty	Unit	Rate	Amount
1.0 (A)	**(A) RCC Framed structure**				
1.1 (A)	RCC Framed Structure Upto Six Storeys				
1.1.2 (A)	Floor Height 2.9mts	5750	sqm	16500.00	94,875,000.00
				Total Cost	**94,875,000.00**
1.0 (B)	**(A) RCC Framed structure (Normal Building)**				
1.1 (B)	RCC Framed Structure Upto Six Storeys				
1.1.2 (B)	Floor Height 2.9 mts	5750	sqm	15000.00	86,250,000.00
1.2	**Extra for**				
1.2.3	Every 0.3mt. Additional height of floor above normal floor height of 3.35mts / 2.90 mts (3.15-2.9=0.25/0.3)	5750	sqm	225.00	1,293,750.00
1.2.6	Making stronger foundation for taking addl. Floor load of one additional floor at later date (addl. Floorarea only - 2 addl. floor)	1910	sqm	2270.00	4,335,700.00
1.2.8	Resisting Earthquake forces	5750	sqm	1140.00	6,555,000.00
1.2.9	RCC Raft foundation (GF area only)	975.00	sqm	6450.00	6,288,750.00
1.4	**Fire fighting**				
1.4.1	With wet riser system	5750.00	sqm	500.00	2,875,000.00
1.5	**Fire Alarm System**				
1.5.2	Automatic Fire Alarm System	5750.00	sqm	500.00	2,875,000.00

Ref DPAR 2012 item	Description	Area / Qty	Unit	Rate	Amount
	Total SH 1				**119,098,200.00**
3.0	**Services**				
3.1	Internal Water Supply & Sanitary Installation @ 10% on 1.1.1	86,250,000.00		15%	12,937,500.00
3.2	External Service Connection @ 5% on normal building	86,250,000.00		5%	4,312,500.00
3.3	Internal Electric Installation @ 12.5% on normal building	86,250,000.00		12.50%	10,781,250.00
3.6	**Extra for**				
3.6.3	**Lightening conductors**				
3.6.3.2	5 to 8 storeys buildings @0.33% on normal building	86,250,000.00		0.33%	284,625.00
3.6.4	Telephone conduits @ 0.5% on normal building	86,250,000.00		0.50%	431,250.00
3.6.6	Computer Conduiting @ 0.5% on normal building	86,250,000.00		0.50%	431,250.00
3.6.7	Quality Assurance@ 1% on normal building	86,250,000.00		1.00%	862,500.00
	Total SH 2				**30,040,875.00**
4	**LIFTS**				
4.1	Passanger Lift				
4.1.1	Capacity/Person = 8 Weight = 544 Kgs. Speed in M/Sec= 1.0 M/Sec Travel= G+4 Doors= Power Operated Control= ACV VVF	2	Each	1800000.00	3,600,000.00
	Additional Price for each additional Floor				
	Additional one floor Floor	2	Each	125000.00	250,000.00
	Total SH 3				**3,850,000.00**
	Total Cost as on 1.10.2012	**[I]**		**I= SH(1+2+3)**	**152,989,075.00**
	Add Cost Index @ 112% on CPWD PAR 2012 effective from 1-07-2018	**[II]**		152,989,075.00	**18,358,689.00**
	TOTAL COST AS PER CPWD PAR' 2012 AFTER ADDING COST INDEX				**171,347,764.00**

CONSTRUCTION OF AIIMS Rajkot

Working Nurses Hostel (For 150 Nurses)

No. of Storeys	=	G+7	
Area of block	=	4000	sqm
Ground Floor Area	=	500	sqm
Ist floor to 7th floor (500x7)		3500	sqm
Above floor 6 level		1000	sqm
Floor Height	=	3.15	mts (G+7)

Ref DPAR 2012 item	Description	Area / Qty	Unit	Rate	Amount
1.0 (A)	**(A) RCC Framed structure**				
1.1 (A)	RCC Framed Structure Upto Six Storeys				
1.1.2 (A)	Floor Height 2.9mts	4000	sqm	16500.00	66,000,000.00
				Total Cost	**66,000,000.00**
1.0 (B)	**(A) RCC Framed structure (Normal Building)**				
1.1 (B)	RCC Framed Structure Upto Six Storeys				
1.1.2 (B)	Floor Height 2.9 mts	4000	sqm	15000.00	60,000,000.00
1.2	**Extra for**				
1.2.1	Over six storeys up to nine storeys (Applicable on total Plinth Area of all floors of specific block)	1000	sqm	560.00	560,000.00
1.2.3	Every 0.3mt. Additional height of floor above normal floor height of 3.35mts / 2.90 mts (3.15-2.9=0.25/0.3)	4000	sqm	225.00	900,000.00
1.28	Resisting Earthquake forces	4000	sqm	1140.00	4,560,000.00
1.2.9	RCC Raft foundation (GF area only)	500.00	sqm	6450.00	3,225,000.00
1.4	**Fire fighting**				
1.4.1	With wet riser system	4000.00	sqm	500.00	2,000,000.00
1.5	**Fire Alarm System**				
1.5.2	Automatic Fire Alarm System	4000.00	sqm	500.00	2,000,000.00

Ref DPAR 2012 item	Description	Area / Qty	Unit	Rate	Amount
	Total SH 1				**79,245,000.00**
3.0	**Services**				
3.1	Internal Water Supply & Sanitary Installation @ 15% on normal building	60,000,000.00		15%	9,000,000.00
3.2	External Service Connection @ 5% on normal building	60,000,000.00		5%	3,000,000.00
3.3	Internal Electric Installation @ 12.5% on normal building	60,000,000.00		12.50%	7,500,000.00
3.6	**Extra for**				
3.6.3	**Lightening conductors**				
3.6.3.2	5 to 8 storeys buildings @0.33% on normal building (B)	60,000,000.00		0.33%	198,000.00
3.6.4	Telephone conduits @ 0.5% on normal building	60,000,000.00		0.50%	300,000.00
3.6.6	Computer Conduiting @ 0.5% on normal building (B)	60,000,000.00		0.50%	300,000.00
3.6.7	Quality Assurance@ 1% on normal building	60,000,000.00		1.00%	600,000.00
	Total SH 2				**20,898,000.00**
4	**LIFTS**				
4.1	Passanger Lift				
4.1.1	Capacity/Person = 8 Weight = 544 Kgs. Speed in M/Sec= 1.0 M/Sec Travel= G+4 Doors= Power Operated Control= ACV VVF	2	Each	1800000.00	3,600,000.00
	Additional Price for each additional Floor				
	Additional three floor Floor	2	Each	375000.00	750,000.00
	Total SH 3				**4,350,000.00**
	Total Cost as on 1.10.2012	**[I]**		**I= SH(1+2+3)**	**104,493,000.00**
	Add Cost Index @ 112% on CPWD PAR 2012 effective from 1-07-2018	**[II]**		104,493,000.00	**12,539,160.00**
	TOTAL COST AS PER CPWD PAR' 2012 AFTER ADDING COST INDEX				**117,032,160.00**

CONSTRUCTION OF AIIMS Rajkot

Nursing student Hostel (For 288 students))

No. of Storeys	=	G+7		
Area of block	=	4500	sqm	
Ground Floor Area	=	580	sqm	
Ist floor to 7th floor (560x7)		3920	sqm	
Above floor 6 level		1120	sqm	
Larger Module Area (35% of Area of Main Block)		1575	sqm	
Floor Height	=	3.15	mts	(G+7)

Ref DPAR 2012 item	Description	Area / Qty	Unit	Rate	Amount
1.0 (A)	**(A) RCC Framed structure**				
1.1 (A)	RCC Framed Structure Upto Six Storeys				
1.1.2 (A)	Floor Height 2.9mts	4500.00	sqm	16500.00	74,250,000.00
				Total Cost	**74,250,000.00**
1.0 (B)	**(A) RCC Framed structure (Normal Building)**				
1.1 (B)	RCC Framed Structure Upto Six Storeys				
1.1.2 (B)	Floor Height 2.9 mts	4500	sqm	15000.00	67,500,000.00
1.2	**Extra for**				
1.2.1	Over six storeys up to nine storeys (Applicable on total Plinth Area of all floors of specific block)	1120	sqm	560.00	627,200.00
1.2.3	Every 0.3mt. Additional height of floor above normal floor height of 3.35mts / 2.90 mts (3.15-2.9=0.25/0.3)	4500	sqm	225.00	1,012,500.00
1.28	Resisting Earthquake forces	4500	sqm	1140.00	5,130,000.00
1.2.9	RCC Raft foundation (GF area only)	580.00	sqm	6450.00	3,741,000.00
1.4	**Fire fighting**				
1.4.1	With wet riser system	3.15	sqm	500.00	1,575.00
1.5	**Fire Alarm System**				

Ref DPAR 2012 item	Description	Area / Qty	Unit	Rate	Amount
1.5.2	Automatic Fire Alarm System	3.15	sqm	500.00	1,575.00
	Total SH 1				**84,763,850.00**
3.0	**Services**				
3.1	Internal Water Supply & Sanitary Installation @ 10% on normal building	67,500,000.00		15%	10,125,000.00
3.2	External Service Connection @ 5% on normal building	67,500,000.00		5%	3,375,000.00
3.3	Internal Electric Installation @ 12.5% on normal building	67,500,000.00		12.50%	8,437,500.00
3.6	**Extra for**				
3.6.3	**Lightening conductors**				
3.6.3.2	5 to 8 storeys buildings @0.33% on normal building	67,500,000.00		0.33%	222,750.00
3.6.4	Telephone conduits @ 0.5% on normal building	67,500,000.00		0.50%	337,500.00
3.6.6	Computer Conduiting @ 0.5% on normal building (B)	67,500,000.00		0.50%	337,500.00
3.6.7	Quality Assurance@ 1% on normal building	67,500,000.00		1.00%	675,000.00
	Total SH 2				**23,510,250.00**
4	**LIFTS**				
4.1	Passanger Lift				
4.1.1	Capacity/Person = 8 Weight = 544 Kgs. Speed in M/Sec= 1.0 M/Sec Travel= G+4 Doors= Power Operated Control= ACV VVF	2	Each	1800000.00	3,600,000.00
	Additional Price for each additional Floor				
	Additional three floor Floor	2	Each	375000.00	750,000.00
	Total SH 3				**4,350,000.00**
	Total Cost as on 1.10.2012	**[I]**		**I= SH(1+2+3)**	**112,624,100.00**
	Add Cost Index @ 112% on CPWD PAR 2012 effective from 1-07-2018	**[II]**		112,624,100.00	**13,514,892.00**
	TOTAL COST AS PER CPWD PAR' 2012 AFTER ADDING COST INDEX				**126,138,992.00**

CONSTRUCTION OF AIIMS Rajkot

Convienent Shopping complex + Restaurent

No. of Storeys = G
Area of block = 250 sqm
Ground Floor Area = 250 sqm
Larger Module Area (40% of Area of Main Block) 63 sqm
Floor Height = 3.30 mts

Ref DPAR 2012 item	Description	Area / Qty	Unit	Rate	Amount
1.0 (A)	**(A) RCC Framed structure**				
1.1 (A)	RCC Framed Structure Upto Six Storeys				
1.1.2 (A)	Floor Height 3.35mts	250.00	sqm	23500.00	5,875,000.00
				Total Cost	**5,875,000.00**
1.0 (B)	**(A) RCC Framed structure (Normal Building)**				
1.1 (B)	RCC Framed Structure Upto Six Storeys				
1.1.2 (B)	Floor Height 3.35 mts	250	sqm	19000.00	4,750,000.00
1.2	**Extra for**				
1.2.5	Every 0.3mt. Deeper foundatgions over normal depth of 1.2m (Total depeth 1.8m)	250	sqm	540.00	135,000.00
1.28	Resisting Earthquake forces	250	sqm	1140.00	285,000.00
1.2.12	Larger modules over 35 sqm. (applicable area) 40% of Total Covered Area	100	sqm	1500.00	150,000.00
1.4	**Fire fighting (Served area only)**				
1.4.2	With sprinkler system	250	sqm	750.00	187,500.00
1.5	**Fire Alarm System (Served area only)**				
1.5.2	Automatic Fire Alarm System	250.00	sqm	500.00	125,000.00
	Total SH 1				**6,757,500.00**

Ref DPAR 2012 item	Description	Area / Qty	Unit	Rate	Amount
3.0	**Services**				
3.1	Internal Water Supply & Sanitary Installation @ 10% on normal building	4,750,000.00		10%	475,000.00
3.2	External Service Connection @ 5% on normal building	4,750,000.00		5%	237,500.00
3.3	Internal Electric Installation @ 12.5% on normal building	4,750,000.00		12.50%	593,750.00
3.6	**Extra for**				
3.6.1	Power Wiring and Plugs @ 4% on normal building	4,750,000.00		4%	190,000.00
3.6.3.1	Lightening arrestor upto 4 storey @ 0.5% on normal building	0.00		0.50%	0.00
3.6.4	Telephone conduits @ 0.5% on normal building	4,750,000.00		0.50%	23,750.00
3.6.6	Computer Conduiting @ 0.5% on normal building	4,750,000.00		0.00%	0.00
3.6.7	Quality Assurance@ 1% on normal building	4,750,000.00		1.00%	47,500.00
	Total SH 2				**1,567,500.00**
	Total Cost as on 1.10.2012	**[I]**		**I= SH(1+2)**	**8,325,000.00**
	Add Cost Index @ 112% on CPWD PAR 2012 effective from 1-07-2018	**[II]**		8,325,000.00	**999,000.00**
	TOTAL COST AS PER CPWD PAR' 2012 AFTER ADDING COST INDEX				**9,324,000.00**

CONSTRUCTION OF AIIMS Rajkot

Dining Block

No. of Storeys	=	G+2	
Area of block	=	1730	sqm
Ground Floor Area	=	580	sqm
Larger Module Area (40% of Area of Main Block)		433	sqm
Floor Height	=	3.60	mts

Ref DPAR 2012 item	Description	Area / Qty	Unit	Rate	Amount
1.0 (A)	**(A) RCC Framed structure**				
1.1 (A)	RCC Framed Structure Upto Six Storeys				
1.1.2 (A)	Floor Height 2.9mts	1730.00	sqm	16500.00	28,545,000.00
				Total Cost	**28,545,000.00**
1.0 (B)	**(A) RCC Framed structure (Normal Building)**				
1.1 (B)	RCC Framed Structure Upto Six Storeys				
1.1.2 (B)	Floor Height 2.9 mts	1730	sqm	15000.00	25,950,000.00
1.2	**Extra for**				
1.2.3	Every 0.3mt. Additional height of floor above normal floor height of 3.35mts / 2.90 mts (3.60-2.9=0.7/0.3)	1730	sqm	630.00	1,089,900.00
1.2.5	Every 0.3mt. Deeper foundatgions over normal depth of 1.2m (Total depeth 1.8m)	580	sqm	540.00	313,200.00
1.28	Resisting Earthquake forces	580	sqm	1140.00	661,200.00
1.2.12	Larger modules over 35 sqm. (applicable area) 40% of Total Covered Area	692	sqm	1500.00	1,038,000.00
1.2	**Extra for**				
1.4	**Fire fighting (Served area only)**				
1.4.1	With wet riser system	1730	sqm	500.00	865,000.00
1.5	**Fire Alarm System (Served area only)**				

Ref DPAR 2012 item	Description	Area / Qty	Unit	Rate	Amount
1.5.2	Automatic Fire Alarm System	1730.00	sqm	500.00	865,000.00
	Total SH 1				**33,377,300.00**
3.0	**Services**				
3.1	Internal Water Supply & Sanitary Installation @ 10% on normal building	25,950,000.00		10%	2,595,000.00
3.2	External Service Connection @ 5% on normal building	25,950,000.00		5%	1,297,500.00
3.3	Internal Electric Installation @ 12.5% on normal building	25,950,000.00		12.50%	3,243,750.00
3.6	**Extra for**				
3.6.3.1	Lightening arrestor upto 4 storey @ 0.5% on normal building	25,950,000.00		0.50%	129,750.00
3.6.4	Telephone conduits @ 0.5% on normal building	25,950,000.00		0.50%	129,750.00
3.6.6	Computer Conduiting @ 0.5% on normal building	25,950,000.00		0.00%	0.00
3.6.7	Quality Assurance@ 1% on normal building	25,950,000.00		1.00%	259,500.00
	Total SH 2				**7,655,250.00**
4	**LIFTS**				
4.1	Passanger Lift				
4.1.8	Capacity/Person = 8 Weight = 544 Kgs. Speed in M/Sec= 1.0 M/Sec Travel= G+4 Doors= Power Operated Control= ACV VVF	1.00	Each	1800000.00	1,800,000.00
	Total SH 3				**1,800,000.00**
	Total Cost as on 1.10.2012	**[I]**		**I= SH(1+2+3)**	**42,832,550.00**
	Add Cost Index @ 112% on CPWD PAR 2012 effective from 1-07-2018	**[II]**		42,832,550.00	**5,139,906.00**
	TOTAL COST AS PER CPWD PAR' 2012 AFTER ADDING COST INDEX				**47,972,456.00**

CONSTRUCTION OF AIIMS RAJKOT
SUMP & OH TANK

Ref DPAR 2012 item	Description	Qty	Unit	Rate	Amount
	Construction of UG Sump				
5.5	Fire Sump	200000	Litre	15	3,000,000.00
5.5	Flush Water/Gardening Sump	3200000	Litre	15	48,000,000.00
5.5	Domestic sump	1370000	Litre	15	20,550,000.00
	Construction of OH Tank with staging height between 20m and upto 30m				
5.3	Fire OHT	290000	Litre	30	8,700,000.00
5.4	Flush Water/gardening OHT	1040000	Litre	30	31,200,000.00
5.5	Domestic OHT	460000	Litre	30	13,800,000.00
	Total Amount				125,250,000.00
	Add Cost Index @ 112% on CPWD PAR 2012 effective from 1-07-2018	125250000			15,030,000.00
	Total (b)				**140,280,000.00**
	Total cost (In Rs.)				**140,280,000.00**

CONSTRUCTION OF AIIMS RAJKOT
EXTERNAL DEVELOPMENT

Ref DPAR 2012 item	Description	Area/ Qty	Unit	Rate	Amount
	Total Plot Area (298 acre)	**1205962**	**Sqm**		
	Area considered for development @ 30% of total plot area	361789	**Sqm**		
6.0	**DEVELOPMENT OF SITE**	**361789**	**Sqm**		
6.1	Leveling	361789	Sq.m	95	34,369,914.04
6.2	Internal roads and paths	361789	Sq.m	145	52,459,342.48
6.3	Sewer	361789	Sq.m	110	39,796,742.57
6.4	**Filter Water Supply**				
6.4.1	Distribution lines 100 mm dia. and below	361789	Sq.m	80	28,943,085.50
6.4.2	Peripheral grid 150 mm to 300 mm dia pipes	361789	Sq.m	60	21,707,314.13
6.4.3	Unfiltered water supply distribution lines	361789	Sq.m	45	16,280,485.60
6.5	Storm water drains	361789	Sq.m	85	30,752,028.35
6.6	Horticulture operations	361789	Sq.m	80	28,943,085.50
6.7	**Street lighting**				
6.7.2	With HPMV Lamps	361789	Sq.m	130	47,032,513.94
6.7.4	Exit sign board i/c electric signage.	361789	Sq.m	85	30,752,028.35
11.0	**Landscaping**				
11.0	Landscaping for non-Residential building for pavement at parking area etc. (10% of construction cost)				
i)	Hospital block	1151400000		10%	115,140,000.00
ii)	Teaching block	427500000		10%	42,750,000.00
iii)	Auditorium	47500000		10%	4,750,000.00
iv)	Shopping complex	4750000		10%	475,000.00
	TOTAL (a)				**494,151,540.45**
	Add Cost Index @ 112% on CPWD PAR 2012 effective from 1-07-2018	494151540			59,298,184.85
	Total (b)				**553,449,725.31**
	Total cost (In Rs.)				**553,449,725.00**

CONSTRUCTION OF AIIMS RAJKOT

FURNITURE & FURNISHINGS

	Description	Quantity	Unit	Rate	Amount
MR	Hospital Furniture, College Furniture, Hostel Furniture, Auditorium, Conference Room	LS			250,000,000.00
	TOTAL FURNITURE & FURNISHINGS				**250,000,000**
				Say	250,000,000.00

CONSTRUCTION OF AIIMS RAJKOT
E&M SERVICES

Ref to DPAR 14 (E&M)	Description	Unit	Rate in Rs.	Qty	Amount in Rs.
	SUB-STATION EQUIPMENTS				
1	Supplying installation testing and commissioning of11/0.433KV Sub-Station equipment comprising H.T. Panel, Transformer, HT Cable, Bus trunking from Transformer to LT Panel, LT Panel, Automatic power factor corrector panel, Essential Panel i/c Earthing, inter connecting power cables in sub- station, safety equipments.	Per KVA	7500	13772	103,289,384
	DIESEL GENERATOR SET				
2	Supplying installation testing and commissioning of silent type D.G. Set, AMF Panel, Bus Trunking /cables from DG Set to essential panel, control cable, Earthing of DG Set and AMF Panel, DG set exhaust piping as per CPCB norms and minor allied works.	Per KVA	10000	11084	110,841,826
5	**UNINTERRUPTED POWER SUPPLY**				
5.1	Supplying installation testing and commissioning of online UPS system with 30 minutes backup i/c batteries.	per KVA	20000	2070	41,396,449
6	**CENTRAL AC PLANT**				
6.1	Supplying installation testing and commissioning of Energy Efficient Central AC Plants (DENTAL AND MEDICAL HOSPITAL)	per TR	70000	2500	175,000,000
6.2	Add for stand by Chilling units system(Hi	per TR	38000	1250	47,500,000
7	**VRV/VRF AC SYSTEM**				

	Supplying installation testing and commissioning of VRV/VRF system i/c indoor, outdoor units, piping, cabling/bus trunking/ rising mains(within the building), wiring, electrical panel & also treated fresh air system- (FOR AUDITORIUM & CLASSROOM BUILDING, ADMIN BLOCK, ANIMAL	per H.P	55000	996	54,780,000
9	**SOLAR PHOTO VOLTAIC POWER GENERATION SYSTEM**				
9.1	Supplying installation testing and commissioning of Grid interactive roof top solar photo voltaic power generation system i/c space frame.	per KWp	100000	138	13,771,918
10	**SOLAR WATER HEATING SYSTEM**				
	Supplying, installation, testing & commisioning of solar water heating system of following rated capacity & region i/c electrical heater back up & make up tank but without piping				
10.2	Solar water heating system with heat exchanger type 1 for warm region				
10.2.3	1000 liter per day	each	230000	201	46,126,500
11	**CCTV SYSTEM**				
	Supplying installation testing and commissioning of IP based CCTV system for building security comprising of PTZ, Fixed camera, cabling, recording, display system and hardware and software support.	Sq.ms.	300	74666	22,399,847
12	**ACCESS CONTROL SYSTEM**				
	Supplying installation testing and commissioning of Access control system for building security comprising of Controller, E&M locks, Reader, Smart cards, cabling, recording, display system and hardware and software support.	Sq.ms.	190	77125	14,653,750
	BUILDING MANAGEMENT SYSTEM				

13	Supplying installation testing and commissioning of Building management system etc. cabling, recording, display system and hardware and software support.				
13.1	Built up area up to 10000 sq mt.	Each Set	4800000	1	4,800,000
13.2	Add extra for built up area beyond 10000 s	per sqmt	160	61250	9,800,000
	WATER SUPPLY SYSTEM				
14.1	**For Flushing & Landscaping** Hydropneumatic Water Supply System Supplying installation testing and commissioning of Hydropneumatic water supply system consisting of 3nos pumps (2 working+1 stand by) i/c microprocessor based control panel and VFD complete as required.	LPM	2000	8643	17,285,565
14.2	**For Domestic, Soft water & Filter back wash** Hydropneumatic Water Supply System Supplying installation testing and commissioning of Hydropneumatic water supply system consisting of 3nos pumps (2 working+1 stand by) i/c microprocessor based control panel and VFD complete as required.	LPM	2000	8990	17,979,129

15	**OCCUPANCY SENSORS** Supplying installation testing and commissioning of occupancy sensors.	Sq.ms.	75	45125	3,384,375
3	**RISING MAINS**				
3.1	Supplying installation testing and commissioning of compact air insulated rising mans comprising of end feed units & tap off boxes with suitable capacity 4 pole MCCB, separatus, flexible joints including bends, elbows & earthing having 35 KA breaking capacity & IP 54 protection.				
3.14	400 A	Per Meter	17600	750	13,200,000
	Total Cost as per " CPWD PAR' 2014 for specialised E&M works"				**696,208,743**
	Add Cost Index @ 112% on CPWD PAR 2012 effective from 1-07-2018				**83,545,049**
	Total Amount (In Rs.)				**779,753,792**
	Items at Market Rates				
MR	LAN Network (except conduiting)	L.S			42,875,000
MR	Wi-Fi	L.S			22,500,000
MR	EPABX & Telephone network (except conduiting)@ Rs. 300/Sqm for overall area	L.S			45,540,000
MR	Supply, installation,testing & commissioning of public address cum voice evacuation system for all buildings	LS			45,000,000
	Total General IT works				**155,915,000**
	HOSPITAL SPECIFIC SOFTWARE/HARDWARE WORKS				
MR	HMIS (Hospital Management & Infromation System) including Call Centre, Helpdesk, Hospital Portal for online appointment system and Queue Management	LS			110,000,000
MR	Server Hardware and System Software & NAS for HMIS & PACS including Data Center works	LS			25,000,000
MR	Picture Archival and Communication System (PACS) including Workstations	LS			15,000,000

MR	Library & Education Management System incl. smart class rooms	LS			30,000,000
MR	Computer Hardware like Desktop, Printers, etc	LS			40,000,000
MR	Nurse Call System @ Rs. 30000 per bed (750 beds)	Bed	30000	750	22,500,000
	TOTAL - Software / Hardware works				**242,500,000**
	OTHER WORKS				
MR	DG Synchronisation Panel	L.S			40,000,000
MR	HSD Yard works	LS			7,500,000
MR	Extra for Superior specifications in HVAC system including provision of HEPA Filters/HEPA Housing/Magnehelic gauges/UVGI/PHI etc. in hospitals & Smoke Extract/Fresh Air staircase/lift well/lift lobby pressurization fans, ducting etc.	L.S			100,000,000
MR	LT Cabling from main Lt panel to Sub panels & from Sub LT panels to DBs/ Floor panels. LT cables	L.S			58,000,000
MR	SCADA for Electric substation	LS			5,000,000
MR	Water Treatment Plant etc. (Filters etc.)	LPM	3500	8990	31,463,476
MR	Water Treatment Provisions (softeners etc.)	LPM	3500	8990	31,463,476
MR	Portable RO Plant	LS			5,000,000
MR	Borewell	Nos.	600000	8	4,800,000
MR	Electric Geysers in Guest house, quarters, etc.	Nos.	25000	200	5,000,000
MR	Split unit AC- 1.5 TR (Min. 4 star rating)	Nos.	55000	340	18,700,000
MR	Boom Barriers (In & Out Gates)	Nos.	350000	10	3,500,000
MR	Superior specifications like LED lights/solar street lights etc.	L.S			75,000,000
MR	Auditorium Accoustics etc.	L.S			20,000,000
MR	Master Antenna TV (MATV) system	L.S			8,500,000
MR	TV (LED, 40" display screen)	Nos.	800000	25	20,000,000
MR	Miscellaneous cost (Superior specifications like circuit breakers, 33 KV HT panels etc.)	L.S			20,000,000
MR	HT cabling from 110kV sub station to 11kV sub stations	L.S			21,000,000
	Total - Other works				**474,926,952**
	Total Cost of Market Rate Items				**873,341,952**
	GRAND TOTAL (In Rs.)				**1,653,095,744**

11.2 COST INDEX CIRCULAR

OF APPROVED BUILDING COST INDEX FOR PLACES UNDER WZ-IV, CPWD, GANDHINAGAR AS ON : 01/07/2018

Place	Cost Index Over PAR 01-10-2012 as base 100
Ahmedabad	114
Gandhinagar	111
Dhegam	110
Himmatnagar	110
Vadnagar	110
Mhesana/ Modhera	110
Taranga	110
Dhragandhara	110
Viramgam	110
Dhansura	110
Rajkot	112
Junagadh	110
Jamnagar	112
Porbandar	110
Dumra	110
Bhavnagar	112
Veraval	111
Diu	111
Bhuj	110
Gandhidham	110
Kandla	110
Mundra	110
Naliya	110
Gaduly	110
Okha/ Dwarka	111

17/08/2018

Assistant Engineer (P)
O/o CE (WZ) IV,CPWD,
GANDHINAGAR

17.8.18

Executive Engineer (P)
O/o CE (WZ) IV,CPWD,
GANDHINAGAR

11.3 MINUTES OF MEETING HELD WITH DISTRICT COLLECTOR, RAJKOT

DR. Vikrant Pandey, IAS
Collector & District Magistrate

सत्यमेव जयते

COLLECTORATE
JILLA SEVA SADAN,
OPP. JAMTOWER, SHROFF ROAD,
RAJKOT - 360 001.
PHONE : (O) 2473900 (R) 2472900
FAX No. : 0281 - 2453621

No. : Land/appeal/2/F.No.1652

Date : 01/09/2017

To,
Shri Sunil Sharma, IAS
Joint Secretary (PM SSY), NEW DELHI.
(Camp : Rajkot Dist. State : Gujarat)

Subject :- **Visit of central team to inspect the site for setting up DP new AIIMS in Rajkot district in Gujarat state.**
Location - 1 , Khandheri - Para Pipaliya, Dist.Rajkot.

Ref:- Your Office Latter No.Z/28016/255/2014-SSH Dt: 29-8-2017

Sir,

As per instructions, details are given below. Maps and details of parameters are attached herewith.

- Rail : Village Khandheri has a railway station which falls on Rajkot-Jamnagar line where passenger trains stop presently. Major railway station Rajkot is about 10 km away. As per telephonic discussion with DRM Bhavnagar, there is possibility of construction of Railway over bridge over track LC No.130/131/129. The matter will be further co-ordinated between state Govt. & Railway (DRM-Bhavnagar) and shall be pursued by the District Administration.
- Airport : The present airport at rajkot city is 9 km away from the site with approximate travelling time of 15 minutes . The proposed airport is about 15 km away from the proposed AIIMES site.
- Road : It is directly accessible through Rajkot-Jamnagar National Highway and proposed 45mt wide road of Rajkot Urban Development Authority. 150 ft. Ring Road no. 2 of Rajkot ensures easy access from all directions to the location. Construction of four lane acess road shall be easily possible.

Email : collector-raj@gujarat.gov.in

- Main water line (Rajkot Jamnagar)of Gujarat Water Infrastructure Limited (GWIL) passes through Khanderi Village and thus water supply shall not be an issue. Alternatye sources are also available locally like Aji Dam etc
- Gujarat Energy Transmission Company (GETCO's) 220 KV and 66 KV substation is located nearby Khandheri and Para Pipaliya Village, Dist.Rajkot. Uniterrupted Power Supply can be easily ensured. District Administration will shift electrical lines as per requirement. Also Provisioning of alternative source of power shall not be an issue.
- Funnel area wrt Airport: as both the proposed locations are far away from existing and new proposed airport, there is no question of the said land falling within funnel area/building construction restricted zone.
- High Tension Line: As per NOC obtained from Executive Engineer Gujarat Energy Trainsmission Corporation, Rajkot dated 1/9/2017 the high tension line shall be removed within 3 months, if required.
- The owner of 3 private survey number holders have expressed their willingness towards land acquistion through negotiation.
- There is adequate facilty of disposal of biomedical waste as is presently being done by PDPU Medical College, Rajkot. 100 acre of waste disposal land is available near khanderi site
- The Khanderi site is surrounded by forest survey numbers and private survey numbers which fall in agricultural/ residential zone as per developmemntal plan 2031

yours Sincerely

(Dr. Vikrant Pandey)
Collector & D.M. Rajkot

Copy for Information to:

1 The Additional. Chief Secretary (ME & MS)
Department of Health & Faimily Welfare,7th Block, 7th Floor,Sachivalaya, GANDHINAGAR

GETCO
GUJARAT ENERGY TRANSMISSION CORPORATION LIMITED
Transmission Division, Laxminagar, Nana Mava main Road, RAJKOT – 360 004.
TeleFax No: (0281) 2367273 Web site: www.getcogujarat.com
Email: eetrrajkot.getco@gebmail.com ; eetrrajkot@yahoo.com
(Regd. Office: Vidyut Bhavan, Race course, Vadodara 390 007

No 17-18/O&M/DN/RAJ/Govt. Ref-8/ 1944 Dt.01.09.17

To,
The District Collector,
New Collector Office.
RAJKOT

***Sub*: Technical Feasibility for 15MW Power Supply to AIMS near to Rajkot City.**

Respected Sir,

In connection with the above, it is to inform your good self that. tehcnincally feasibility for giving power supply to location for AIMS near to Rajkot City as under.

(1) If location for AIMS is near to Village:-Pambhar-Itada, 15MW power supply to AIMS will be given from 66KV Khirasara S/S by 66KV Double Circuit line approximate length 6.0 KM & it is technically feasible.

(2) If location for AIMS is near to Village:-Khandheri, then existing 66KV Line required to shift for space availability & shifting work will be complete after shifting application and estimate paid & work will be complete approximately in 3-months.

(3) If location for AIMS is near to Village:-Khandheri, 15MW power supply to AIMS will be given from 66KV Stadium S/S by 66KV Double Circuit line approximate length 4.0KM & it is technically feasible.

This is for your kind information & further needful please.

Thanking you.

Yours faithfully.

(S.G. Kanjiya)
Executive Engineer (TR.)
GETCO ,Rajkot.

C.F.W.Cs To. (1) The ACE(TR), GETCO, Zonal Office-Rajkot.
(2) The SE(TR), GETCO, Circle Office-Gondal.

CHALLENGE METHOD FOR SITE SELECTION FOR NEW AIIMS
CHART SHOWING DIFFERENT PARAMETERS AND HOW MARKS ARE GIVEN
AIIMS IN GUJARAT – SITE (2) – Village Khirasara, Rajkot District
(Parameter Details for AIIMS)

INTRODUCTION

Rajkot is central to Saurashtra-Kutchh Region and also the biggest city in the region. Presently for the population of about 1.9 crore of Saurashtra -Kutchh Region there are only 2 super speciality hospital which can cater to only a fraction of disease burden as is clear from Annexure I. Presently the people of this region have to travel all the way to Ahmedabad for tertiary treatment. the distance between various places in saurashtra Kutchh region from Ahmedabad is as per the table below. The travel time is upto 7-8 hrs for Ahemadabad. On the other hand, Vadodra is only 100 km from Ahmedabad and can be reached within 2 hours.

Sr. No.	Name of City	Distance from Ahmedabad (k.m.)	Distance from Rajkot (k.m.)
1	Dwarka-Mithapur	500	235
2	Porbandar	415	180
3	Somnath-Veraval	415	180
4	Una-Kodinar	475	230
5	Jamnagar	315	90
6	Junagadh	325	95
7	Amreli	250	95
8	Kutchh-Bhuj	350	180

CHALLENGE METHOD FOR SITE SELECTION FOR NEW AIIMS

CHART SHOWING DIFFERENT PARAMETERS AND HOW MARKS ARE GIVEN
AIIMS IN GUJARAT – SITE (2) – Village Khirasara, Rajkot District

Fig 1 : Map of saurashtra Kutcch Region showing central location of Rajkot

CHALLENGE METHOD FOR SITE SELECTION FOR NEW AIIMS

CHART SHOWING DIFFERENT PARAMETERS AND HOW MARKS ARE GIVEN

AIIMS IN GUJARAT – SITE (2) – Village Khirasara, Rajkot District

(Parameter Details for AIIMS)

Sr. No.	Parameters	Weightage	Details
i	Early Availability of suitable land	15	VILLAGE KHIRASARA 1) Government land measuring 971280 sq. mt is available in survey number 412p of village Khirasara 2) The shape of the plot is regular 3) The soil strata is Murrum-soft rock-hard rock which is perfect for civil construction. 4) The land is owned by the Government. The land is open and unoccupied, free of any encroachment. 5) The terrain is such that there is no permanent water logging *The land is 9 km away from Municipal Corporation's limits. It is directly accessible through Rajkot-Kalvad state highway and khirasara Motavada road and proposed 45mt wide road of Rajkot Urban Development Authority.
ii	Provision of utilities (Power, water supply etc.)	05	VILLAGE KHIRASARA 1) Gujarat ENergy Transmission Company (GETCO's) 66KV substation is located nearby. Uniterrupted Power Supply can be easily supilied. 2) Rajkot-Kalavd(Jamnagar) Main water line of Gujarat Water Infrastructure Limited (GWIL) passes through KhirasaraVIllage and thus water suplly shall not be an issue. 3) Solid waste shall be disposed off by the Municipal Corporation.

			Natural Nullahs (Drains) nearby can serve as sewer for treated waste. Development of dedicated Sewer shall not be an issue after sanctioning of the project
iii	Health indicators & gap in tertiary health care facilities	20	a) There is one govt Medical college in Rajkot. There are two government medical colleges in Vadodra. b) Ther is NO private medical college in Rajkot while there are private medical colleges like Parul University in Vadodra. *Ref Annexure I
iv	Connectivity (rail/ airport/ road)	15	VILLAGE KHIRASARA 1) Railways: Nearest Railway station is Bhaktinagar whcih is 10 km away. Major railway station Rajkot is about 20 km away. 2) Airport : The present airport is 20 km away from the site with approximate travelling time of 35 minutes . The proposed airport is about 35 km away. 3) Road: It is directly accessible through Rajkot-Kalvad state highway and khirasara Motavada road and proposed 45mt wide road of Rajkot Urban Development Authority
v	Primary & Secondary healthcare facilities nearyby	10	a) Rajkot district has 34 PHCs and 11 CHCs b) There are 4 subdistrict hospital and 1 districct hospital in the district. *Ref Annexure II

vi	Accessibility of school/ college facilities	10	A (i) there are many prestigious private english medium schools some of which are more than a century old like Rajkumar College (Meant for princes of royal families in those days). Delhi Public School, St. Paul's English Medium school some of the other reputed schools. (II) There are numerous government run schools. Every village/locality has a govt. School. B (i) Saurashtra University is located in Rajkot which has more than 100 govt colleges under its umbrella. There are many government colleges of all the streams in Rajkot including medical, engineering, arts and commerce. (II) Rajkot has more than 5 private universities and tens of private colleges imparting eduacation in all the streams
vii	Employment opportunities for family	05	a) Major industrial and commercial establishments have a presence in Rajkot. Major oil PSUs like Indian oil, HPCL, BPCL, Cairn, have bottling plants, pipelines in Rajkot. There are 17 major industrial estates managed by Gujarat Industrial Development Corporation.All major banks have a presence in Rajkot b) Many national and state level instiutions are located in Rajkot like All India Institute of Local Self Government, Sardar Patel Institute of Public Administration, Saurashtra University, NCC regional command etc. Rajkot being business hub of Saurashtra Kutchh Region, ample job and business opportunities are available for family members. Rajkot is a hub of small scale industries with many indusrial estates.

viii	Fast track single window for clearances	05	Fast Track Single window is in place for such projects by the state government. Same as applicable for Vadodra
ix	Financial incentives (state contribution VAT/ Stamp duty exemption)	05	**Pertains to the state government.** Same as applicable for Vadodra
x	Unallocated (To be suitably considered by the selection committee)	10	Pertains to the selection committe .
	Total	100	

Collector
Rajkot Dist.

Annexure- I (AIIMS Details)

Sr. No.	Name	No. of beds required as per population of Saurashtra - Kutchh Region	No. of beds available at present	No. of doctors required as per population of Saurashtra - Kutchh Region	No. of doctors available
1	Cardiothoracic Surgery, Bypass Surgery etc.	300	0	8	0
2	Knee & Hip Replacement Surgery	100	0	4	0
3	Spinal Surgery	150	0	6	0
4	Burns Unit	240	50	8	6
5	Corneal, retinal surgeries etc	60	0	4	3
6	Kidney Transplant	60	0	4	0
7	Organ Transplant	100	0	6	0
8	Plastic Surgery	240	15	8	1
9	IVF	80	0	4	2
10	Hematology	160	0	6	1
11	CT Scan, MRI etc.	6 sets	0	12	8
12	Cancer Surgery, Chemotherapy, Linear Radio Therapy etc.	300	10	12	1
13	AIR Ambulance	4	0	4	0

Above mentioned member of beds and doctors required is based on incidence and previlence of diseases in Saurashtra and Kutchh

Gap in Tertiary Health care facility:-

- Cardiothoracic Surgery department and Bypass Surgery Facilities not available.
- Cardiac Cath Lab and specialist services by cardiologist not available.
- Intensive Burns care facility not available.
- Kidney Transplant and Organ Transplant services are not available.
- IVF facility not available
- A separate Cancer care unit and Radiotherapy facility not available.
- A separate Neurosurgery, Plastic surgery and Urology department not available.
- Neurology, Nephrology, Cardiology, Endocrinology and gastroenterology service not available.

Collector
Rajkot Dist.

Annexure- II

PDU Civil Hospital, Rajkot (Year : April-2016 to March-17)

OPD		
Sr. No.	**Department**	**Total OPD**
1	General	90327
2	Medicine	140821
3	Surgery	69187
4	Gynecology & OBST	62765
5	Pediatrics	65546
6	Orthopedics	90859
7	ENT	43624
8	Opthalmology	49690
9	Dermatology	109063
10	Dental OPD	22531
11	T.B. & Chest	15248
12	Psychiatry	47161
13	Emergency	122840
14	Neuro	3020
15	Urology	788
	Total OPD	**933470**

Indoor Admission		
Sr. No.	**Speciality wise admission**	**Admission**
1	Medicine	26762
2	Surgery	6123
3	Obs. & Gynec	19553
4	Pediatrics	15125
5	Orthopedics	14378
6	ENT	2549
7	Opthalmology	1976
8	TB & Chest	2618

9	Dermatology	446
10	Dental	2
11	Psychiatric	525
12	Neurology	29
13	Urology	58
14	Plastic Surgery	360
15	Burns	514
16	Cancer (Chemotherapy)	1418
17	Emergency	10843
	Total Deliveries	**103279**
	Total Deliveries	**7292**
Sr. No.	**Laboratory Services**	**No. of Test**
1	Hematology	590047
2	Biochemestry	574248
3	Histopathology	12463
4	FNAC	22680
5	Serology	143099
6	Mictrobiology	25431
Sr. No.	**Radiology Tests/ Investigations**	**Tests**
1	X-ray	230284
2	Ultrasonography	73823
3	MRI	4954
4	CT Scan	4725

Collector
Rajkot Dist.

As per Indian Public Health Standard 20124 Number of specialist & bed required

Population = 1.75 crore (As per Census 2011)

- Estimated current population = 1.90 crore
- Annual admission rate = 1 per 50 population
- Average hospital stay = 5 days per patient
- Total admissions = 1.90 crore x (1/50) = 380000 admissions per year
- Avg. days per year = 350000 x 5 = 1900000
- Total number of beds required when occupancy is 100% = 1900000/365 =5205 beds
- These beds required for various specialist services at tertiary care level.
- Around 3800 beds are available at various District & Sub District Hospital and tertiary care hospital Saurashtra- Kutch Region
- Accordingly to geography location of Saurashtra Kutch region, no super specialist services gor cardiology, oncology, neurology, nephrology etc available in government hospital.
- So, all services enlisted are likely required in the region.

Collector
Rajkot Dist.

CHALLENGE METHOD FOR SITE SELECTION FOR NEW AIIMS
CHART SHOWING DIFFERENT PARAMETERS AND HOW MARKS ARE GIVEN
AIIMS IN GUJARAT – SITE (1) – Village -Khandheri and Para Piplaiya, Rajkot District
(Parameter Details for AIIMS)

INTRODUCTION

Rajkot is central to Saurashtra-Kutchh Region and also the biggest city in the region. Presently for the population of about 1.9 crore of Saurashtra -Kutchh Region there are only 2 super speciality hospital which can cater to only a fraction of disease burden as is clear from Annexure I. Presently the people of this region have to travel all the way to Ahmedabad for tertiary treatment. the distance between various places in saurashtra Kutchh region from Ahmedabad is as per the table below. The travel time is upto 7-8 hrs for Ahemadabad.
On the other hand, Vadodra is only 100 km from Ahmedabad and can be reached within 2 hours.

Sr. No.	Name of City	Distance from Ahmedabad (k.m.)	Distance from Rajkot (k.m.)
1	Dwarka-Mithapur	500	235
2	Porbandar	415	180
3	Somnath-Veraval	415	180
4	Una-Kodinar	475	230
5	Jamnagar	315	90
6	Junagadh	325	95
7	Amreli	250	95
8	Kutchh-Bhuj	350	180

CHALLENGE METHOD FOR SITE SELECTION FOR NEW AIIMS

CHART SHOWING DIFFERENT PARAMETERS AND HOW MARKS ARE GIVEN

AIIMS IN GUJARAT – SITE (1) – Village-Khandheri and Para Piplaiya, Rajkot District

(Parameter Details for AIIMS)

Fig 1 : Map of saurashtra Kutcch Region showing central location of Rajkot

CHALLENGE METHOD FOR SITE SELECTION FOR ...

CHART SHOWING DIFFERENT PARAMETERS AND HOW MARKS ARE GIVEN

AIIMS IN GUJARAT – SITE (1) – Village-Khandheri and Para Piplaiya, Rajkot District

(Parameter Details for AIIMS)

Sr. No.	Parameters	Weightage	Details
1	Early Availability of suitable land	15	OPTION 1: VILLAGE KHANDERI AND PARA PIPALIYA A) Government Land totaling 298 acre is available in combination of Survey No 16p3 measuring 665908 sq. mt.(164 acres and 22 gunthas) of village Khanderi in Paddhari Taluka and adjacent S.no 197 of VIllage Para Pipaliya of Rajkot Taluka measuring 543592 sq mt (134 Acre 13 guntha). B) The shape of the plot is regular C) The soil strata is Murrum-soft rock-hard rock which is perfect for civil construction. D) The land is owned by the Government. The land is open and unoccupied, free of any encroachment. E) The terrain is such that there is no permanent water logging *It is directly accessible through Rajkot-Jamnagar National Highway and proposed 45mt wide road of Rajkot Urban Development Authority. The land is close to Rajkot and is 6 km from Municipal Corporation's limits.

vii	Employment opportunities for family	05	a) Major industrial and commercial establishments have a presence in Rajkot. Major oil PSUs like Indian oil, HPCL, BPCL, Cairn, have bottling plants, pipelines in Rajkot. There are 17 major industrial estates managed by Gujarat Industrial Development Corporation.All major banks have a presence in Rajkot b) Many national and state level instiutions are located in Rajkot like All India Institute of Local Self Government, Sardar Patel Institute of Public Administration, Saurashtra University, NCC regional command etc. Rajkot being business hub of Saurashtra Kutchh Region, ample job and business opportunities are available for family members. Rajkot is a hub of small scale industries with many indusrial estates.
viii	Fast track single window for clearances.	05	Fast Track Single window is in place for such projects by the state government. Same as applicable for Vadodra
ix	Financial incentives (state contribution VAT/ Stamp duty exemption)	05	**Pertains to the state government. Same as applicable to vadodra**
x	Unallocated (To be suitably considered by the selection committee)	10	Pertains to the selection committe .
	Total	100	

Comparing the existing infrastrucre and geographical situation Option 1 ie site of VIllage Khanderi and Para Pipaliya is most suitable.

Collector
Rajkot Dist.

ii	Provision of utilities (Power, water supply etc.)	05	OPTION1 : VILLAGE KH. .NDERI AND PARA PIPALIYA a) Gujarat Energy Transmission Company (GETCO's) 220 KV and 66KV substation is located nearby. Uniterrupted Power Supply can be easily ensured. b) Main water line (Rajkot Jamnagar)of Gujarat Water Infrastructure Limited (GWIL) passes through Khanderi VIllage and thus water suplly shall not be an issue. c) Solid waste shall be disposed off by the Municipal Corporation. Natural Nullahs (Drains) nearby can serve as sewer for treated waste. Development of dedicated Sewer shall not be an issue after sanctioning of the project.
iii	Health indicators & gap in tertiary health care facilities	20	a) There is one govt Medical college in Rajkot. There are two government medical colleges in Vadodra. b) Ther is NO private medical college in Rajkot while there are private medical colleges like Parul University in Vadodra. *Ref Annexure I
iv	Connectivity (rail/ airport/ road)	15	OPTION 1: VILLAGE KHANDERI AND PARA PIPALIYA 1) Rail : VIllage KhaNderi has a railway station which falls on Rajkot-Jamnagar line where passenger trains stop presently. Major railway station Rajkot is about 10 km away 2) Airport : The present airport is 9 km away from the site with approximate travelling time of 15 minutes . The proposed airport is about 15 km away.

vii	Employment opportunities for family	05	a) Major industrial and commercial establishments have a presence in Rajkot. Major oil PSUs like Indian oil, HPCL, BPCL, Cairn, have bottling plants, pipelines in Rajkot. There are 17 major industrial estates managed by Gujarat Industrial Development Corporation.All major banks have a presence in Rajkot b) Many national and state level instiutions are located in Rajkot like All India Institute of Local Self Government, Sardar Patel Institute of Public Administration, Saurashtra University, NCC regional command etc. Rajkot being business hub of Saurashtra Kutchh Region, ample job and business opportunities are available for family members. Rajkot is a hub of small scale industries with many indusrial estates.
viii	Fast track single window for clearances.	05	Fast Track Single window is in place for such projects by the state government. Same as applicable for Vadodra
ix	Financial incentives (state contribution VAT/ Stamp duty exemption)	05	**Pertains to the state government. Same as applicable to Vadodra**
x	Unallocated (To be suitably considered by the selection committee)	10	Pertains to the selection committe .
	Total	100	

Comparing the existing infrastrucre and geographical situation Option 1 ie site of VIllage Khanderi and Para Pipaliya is most suitable.

Collector
Rajkot Dist.

Annexure- I (AIIMS Details)

Sr. No.	Name	No. of beds required as per population of Saurashtra - Kutchh Region	No. of beds available at present	No. of doctors required as per population of Saurashtra - Kutchh Region	No. of doctors available
1	Cardiothoracic Surgery, Bypass Surgery etc.	300	0	8	0
2	Knee & Hip Replacement Surgery	100	0	4	0
3	Spinal Surgery	150	0	6	0
4	Burns Unit	240	50	8	6
5	Corneal, retinal surgeries etc	60	0	4	3
6	Kidney Transplant	60	0	4	0
7	Organ Transplant	100	0	6	0
8	Plastic Surgery	240	15	8	1
9	IVF	80	0	4	2
10	Hematology	160	0	6	1
11	CT Scan, MRI etc.	6 sets	0	12	8
12	Cancer Surgery, Chemotherapy, Linear Radio Therapy etc.	300	10	12	1
13	AIR Ambulance	4	0	4	0

Above mentioned member of beds and doctors required is based on incidence and previlence of diseases in Saurashtra and Kutchh

Gap in Tertiary Health care facility:-

- Cardiothoracic Surgery department and Bypass Surgery Facilities not available.
- Cardiac Cath Lab and specialist services by cardiologist not available.
- Intensive Burns care facility not available.
- Kidney Transplant and Organ Transplant services are not available.
- IVF facility not available
- A separate Cancer care unit and Radiotherapy facility not available.
- A separate Neurosurgery, Plastic surgery and Urology department not available.
- Neurology, Nephrology, Cardiology, Endocrinology and gastroenterology service not available.

Collector
Rajkot Dist.

Annexure- II

PDU Civil Hospital, Rajkot (Year : April-2016 to March-17)

OPD		
Sr. No.	**Department**	**Total OPD**
1	General	90327
2	Medicine	140821
3	Surgery	69187
4	Gynecology& OBST	62765
5	Pediatrics	65546
6	Orthopedics	90859
7	ENT	43624
8	Opthalmology	49690
9	Dermatology	109063
10	Dental OPD	22531
11	T.B. & Chest	15248
12	Psychiatry	47161
13	Emergency	122840
14	Neuro	3020
15	Urology	788
	Total OPD	**933470**

Indoor Admission		
Sr. No.	**Speciality wise admission**	**Admission**
1	Medicine	26762
2	Surgery	6123
3	Obs. &Gynec	19553
4	Pediatrics	15125
5	Orthopedics	14378
6	ENT	2549
7	Opthalmology	1976

8	TB & Chest	2618
9	Dermatology	446
10	Dental	2
11	Psychiatric	525
12	Neurology	29
13	Urology	58
14	Plastic Surgery	360
15	Burns	514
16	Cancer (Chemotherapy)	1418
17	Emergency	10843
	Total Deliveries	**103279**
	Total Deliveries	**7292**
Sr. No.	**Laboratory Services**	**No. of Test**
1	Hematology	590047
2	Biochemestry	574248
3	Histopathology	12463
4	FNAC	22680
5	Serology	143099
6	Mictrobiology	25431
Sr. No.	**Radiology Tests/ Investigations**	**Tests**
1	X-ray	230284
2	Ultrasonography	73823
3	MRI	4954
4	CT Scan	4725

Collector
Rajkot Dist.

As per Indian Public Health Standard 20124 Number of specialist & bed required

Population = 1.75 crore (As per Census 2011)

- Estimated current population = 1.90 crore
- Annual admission rate = 1 per 50 population
- Average hospital stay = 5 days per patient
- Total admissions = 1.90 crore x (1/50) = 380000 admissions per year
- Avg. days per year = 350000 x 5 = 1900000
- Total number of beds required when occupancy is 100% = 1900000/365 =5205 beds
- These beds required for various specialist services at tertiary care level.
- Around 3800 beds are available at various District & Sub District Hospital and tertiary care hospital Saurashtra- Kutch Region
- Accordingly to geography location of Saurashtra Kutch region, no super specialist services gor cardiology, oncology, neurology, nephrology etc available in government hospital.
- So, all services enlisted are likely required in the region.

Collector
Rajkot Dist.