# CREATING A CHILD FRIENDLY ENVIRONMENT FOR CHILDREN'S HEALTH AND WELLNESS

**A Dissertation Submitted**
**in Partial Fulfilment of the Requirements**
**for the Degree of**

## MASTER OF ARCHITECTURE

**in**
**Architecture**

**by**
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**to the**
**School of Architecture and Planning**

**BABU BANARSI DAS UNIVERSITY**
**LUCKNOW**
**June,2023**

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It is certified that the work contained in this thesis entitled **"Creating a child friendly Environment For Children's Health and Wellness",** by **Varsha Yadav** (Roll No.1200109013), for the award of **Master of Architecture** from Babu Banarasi Das University has been carried out under our supervision and that this work has not been submitted elsewhere for a degree.

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Varsha Yadav

**Creating a Child Friendly Environment For Children's Health And Wellness**
**Varsha Yadav**

# ABSTRACT

The thought of spending time in a hospital as a patient or visitor is stressful and scary for anyone, and more so for children. Children's hospital should be child friendly and safe, thus creating a "small world in itself". The aim of this dissertation is to understand how children's hospitals can be designed to make the hospital experience for children less stressful, while attempting to accomplish a building more pleasant and child-friendly. The research explores ways to integrate elements and principles in children's hospitals by studying child psychology to create a child friendly environment where the children will forget their pain and will not be scared of hospitalization. The first part of the research is based on literature review, exploring the Children psychology according to age and their perspective towards built environment. In second stage, a set of guidelines were compiled addressing the factors that influence healing environments. In a third stage, four case studies, three international and one from India is being done. Not many children hospital are there in India and the one that has been studied there also the architect has taken the concept from international projects. Survey has been done of Primary users (children between 6 to 18 years) Secondary users (Parents of children below 6 years), as this age group are unable to express or answer and understand the questions. Data collected has been analyzed and parameters found, sense of control, social support, positive distractions, sensorial dimensions and age appropriate environment to determine the elements and spaces for children's hospital environments that can be used to strengthen the designs.

KEYWORDS: Children Friendly Environment, Health, Child Psychology, Wellness, Healing Environment.

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# CHAPTER 1

# INTRODUCTION

## 1.1 INTRODUCTION

Children are our future .Children's development affects the development of the society which in turn affects the development of our world. Childhood is the most important period of human life and it is the childhood that moulds the character of the child. Our future depends on our children. Hence children are most important. Children deserves the environment which makes them feel safe and secure and this in return give rise to healthy and mentally fit well being, provides stability and supports child development. Hence giving a child-friendly environment is essential for the development of a child at various stages. They have a positive impact on the child's growth and development process. Children who are suffering from illness are often restricted in their activities and therefore feel different, and socially isolated. According to research from Queen Mary University of London children will likely experience mental illness in their early adolescence than healthy children, if they are suffering from long-term health conditions. Children shows mental illness at 10 years who have chronic health problems, and such children continues to show poor mental health at the ages of 13 and 15.Children's development and wellbeing is affected by illness as it disrupts their normal lives. As development and illness goes hand in hand. Therefore for our children's health and well being hospitals are essential. Not only hospitals are essential but they are of utmost importance of all the infrastructures and it has been even proved during COVID-19 period, when everything was under lockdown the only operational building was hospital. Hence it is important to manage two most important things children and hospital and CREATING A CHILD FRIENDLY ENVIRONMENT FOR CHILDREN'S HEALTH AND WELLNESS.

## 1.2 NEED OF THE PROJECT

Children staying in hospital can be a poignant experience because hospitals are generally associated with being ill and suffering from pain. Already a child may not be feeling well and then also has to deal with sad, gloomy and exchange their familiar environment with the structured hospital system. Medicine alone is considered sufficient for cure of diseases. According to WHO constitution merely the absence of disease does not mean that a person is healthy but health means it is a condition when a person attains physical ,mental and social well being, which can be achieved through the hospital design and environment which can add to the healing process. In case of Children's hospital, its design becomes important because children are under process of learning by interacting with the world around. To make any space more responsive and interactive it is very essential to

understand user perspective. Adolescents and various age groups have different perceptions. Particularly stays in the hospital require specific activities for a normal development. Hence for making hospitals stay pleasant and enjoyable architecture can play a great role. Therefore for designing any built environment for children it is necessary to design with respect to psychology of the children for their positive development.

## 1.3 AIM

This dissertation aims to study child psychology according to their age and understand how the built environment psychologically affects children and to understand how children's hospitals can be designed to make the hospital experience for children less stressful, while attempting to accomplish a building that is pleasant and child-friendly.

## 1.4 OBJECTIVE

The main objective is to understand the impact of architecture on child psychology and vice –versa.

## 1.5 RESEARCH QUESTION

Why Architectural planning and designing spaces for children are based on adult's perception that may not be relevant to the children's functioning?
Why not design children spaces according to child psychology?
How child psychology impact architecture and how architecture affects child behavior?
Ways to integrate elements and principles in children's hospitals by studying child psychology to create a child friendly environment where the children will forget their pain and will not be scared of hospitalization?

## 1.6 METHODOLOGY

Methodology adopted for the exploration of the topic includes study of background and theoretical studies like of Jean Piaget's theory, study of child friendly environment and study of methods suitable for collecting data from the children directly. Collection of data relevant to the topic is done through internet, books, research papers, survey and drawings. As part of the surveys and interviews, an exercise was conducted wherein the children were given paper and colors, and were asked to draw their interpretations of a hospital as the way they would like it to be. Analysis of collected data is then done to formulate design language. Literature study and case study is been done and comparative analysis of literature studies and case studies is made through which inferences and further design considerations has been derived.

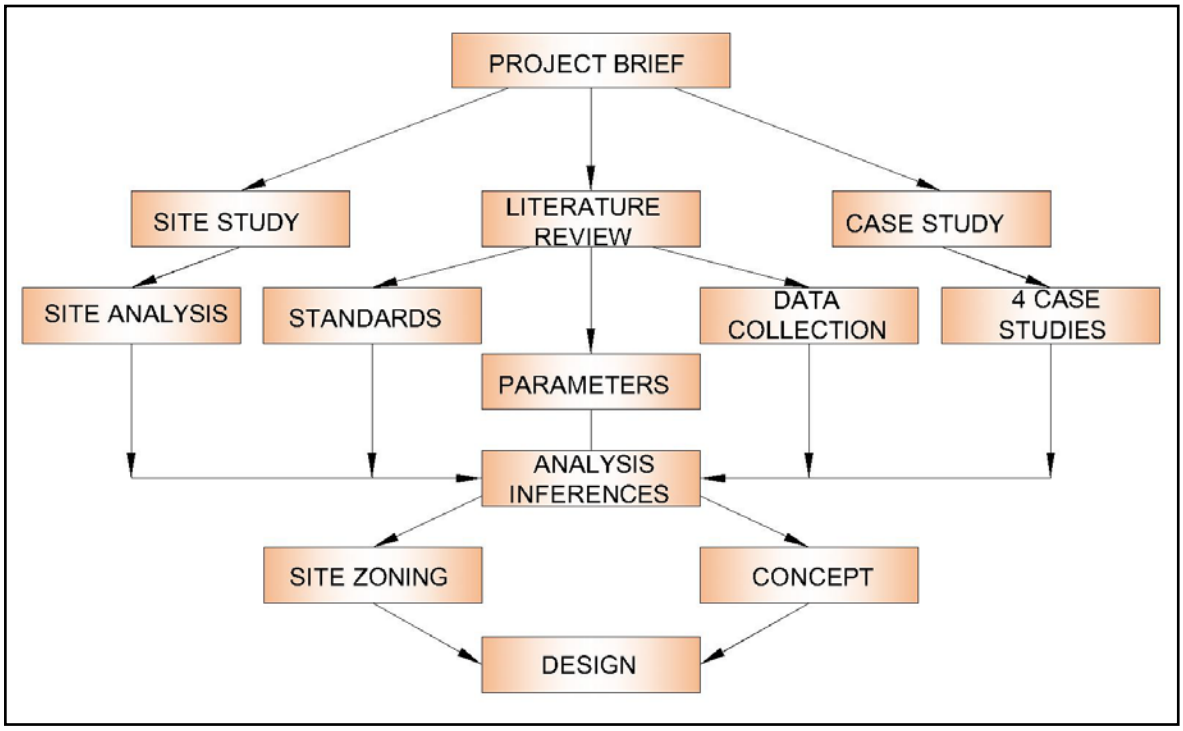



**Figure 1. 1** Methodology chart

## 1.7 LIMITATION

Scope is limited to considering children psychology in general and designing according to their perspective. While designing gender of children is not considered neither special ill children have been studied.

# CHAPTER 2

# BACKGROUND

## 2.1 ORIGIN AND EVOLUTION OF HOSPITALS

The hospital has always been a space to care and cure people but it has not always been housed in a healthcare setting, as we know now a days.
In the beginning of the Greek civilization (460-360 BC), the Asklepieion introduced the idea of spiritual health , recovery through nature, such as natural light, ventilation and outside views. Romans (27 BC– 410 AD) used the same methods and added the military hospital and sanitary systems. In the medieval times the Catholic Church provided the Healthcare support but there was lack of light , ventilation and thermal comfort in the chapels Nature benefits were not considered at all. Although the models assumed different approaches but they all symbolizes social exclusion. In the 18$^{th}$ century as a result of the progress of medicine and new understanding of the contagion process, the pavilion model came, as a 'ventilation machine'. By the end of the 19$^{th}$ century, importance was given to medicines and technology ignoring the therapeutic effects of hospital environment. In the 20th century the discovery of bacteria and the x-ray machine happened. The hospitals were started to build as compact structures and block type planning started due to increased land prices and limited land.After this technological boom, in order to return healthcare facilities to their users, a counter culture emerged. In order to offer psychological and emotional support to patients and improve their well being architectural quality became required besides in providing medical benefits. Pediatric Hospitals are a quite recent with a and lesser is known about their evolution.

## 2.2 CHILD PSYCHOLOGY

One of the branches of the psychology is Child psychology. The main focus is the study of behavior and mind of children from infant to adolescence. Child psychology deals not only with how children grow physically, but also seeks to understand their mental, emotional, and social development. As per Britannica Child psychology is also called child development. It is the study of the psychological process of children and, how these differ from those of adults. **From birth to two years of age (Sensory motor stage)**, the child begins to develop reflexes, habits, hand-eye coordination, object permanence (Knowing something exists, even though it cannot be seen), trial and error experiments.
At this stage children depend upon their parents. Family and home environment effects the child's behavior and character. Between these ages Children also start walking. **Between three and six years (Pre operational Stage)** the child begins to develop ability to represent objects with images and words, language skills**,** imagination. During this stage children learn through imitation and play. They begin to use reasoning but instead of logical it is intuitive. Their dependency upon their parents decreases. They enjoy freedom.

At this age children can represent their feelings only symbolically as they possess only the basic graphic and language skill. At **6 to 13 years of age (Concrete operational stage)** the child begins to develop the fundamentals of logic ability to sort objects, ability to classify objects**.** Children start to go to school and learn through activities. Children command over skills of graphics and language. They have increased interactions with friends and the environment, and can explore places in their neighborhood. **Children aged between 14 and 18 years-adolescence stage (Formal operational stage)** begin to develop ability to hypothesize, test and reevaluate hypotheses
Children begin thinking in a formal systematic way. At this age children develop command over cognitive, emotional, and language skills. They start interacting with nature and environment as their movement area increases.

## 2.3 CHILD FRIENDLY ENVIRONMENT

A child-friendly environment is one where children feel comfortable and experience a sense of belonging, children are able to participate without worrying of being judged about what is shared and who is watching them, appropriate language is used by adults, get them engage with tools and games they understand and environment that is predictable and engaging, there are spaces where children can have fun and experience positivity and are free from any challenges they are experiencing. Children perceive environment differently than adults. Nowadays the cities are growing without considering the social needs especially that of the children. Our children suffer from lack of physical activities as well as lack of social relationship. Therefore for children growth and social interactions there is need of improvement of these spaces. Children and young adolescents are important to form social group within society. How children perceives their environment must be understood and should be taken into consideration while planning. In the recent years, most of the children spent their free time watching TV and doing non-physical activities. In order to prevent children idleness, loss of awareness and lack of interaction with the environment there is need of creating more recreational spaces. Unfortunately, mostly children's spaces have been designed without consideration of their psychological needs like need for variety in color and shape. To enhance children's creative abilities it is essential to pay attention to the the spaces designed for children. The buildings designed for children must make them feel comfortable and relax and should not create fear. In order to ignite feelings like kindness, sense of emotion the spaces created for children should have spirited and light color and shapes with abstract form. (Moore and Cosco, 2007:34). Perception of space is difficult. Feelings of privacy, control and security can be provided through places. Place where children can feel relax, comfortable and clam are considered their favourite place. These places and such environment provide emotional support and restorative experiences and make forget the worries. (Koplan, 2000).

Table 2. 1 The Characteristics of Child-Friendly Environment

| S.No. | Characteristics | Definition | Examples |
|---|---|---|---|
| 1. | Scale | proportion with children size | 1-proportion between installation size and children size<br>2-attend to children furniture size |
| 2. | Amenity | openness and aesthetics | 1-guard entrance<br>2-attendance of parents in children spaces |
| 3. | Safety | physical and Mental Security | 1-soft parket floor<br>2-attend to edge |
| 4. | Accessibility | convenience and walk ability | 1-clear relating ways<br>2-apparent entrance |
| 5. | sociability | conduciveness to gathering and staying | 1-development of children participant<br>2- efficient area for group play |
| 6. | variety | variability, challenge and complexity | 1- motivating color<br>2-mysterious relating ways<br>3-complex playing installation form |

Source Shima Oloumi et al. / Procedia - Social and Behavioral Sciences 35 ( 2012 ) 431 – 439

The child's interaction with the environment is of great importance, in a way that it affects the personality and the child's physical and mental growth. According to what Piaget has said that the children see the world from different perspective than adults therefore for the child's physical and mental growth it is essential to take into consideration by designers to create comfortable, secure, accessible, attractive and creative spaces.(Seyf,2000,Singer 1996).

Table 2. 2 The cognitive stage of each age group, followed by respective age-friendly requirements for hospitalized children and design guidelines:

| **AGE GROUP** | **COGNITIVE DEVELOPMENTS** (Piaget theory, in: Littlefield-Cook, Cook, Berk and Bee, 2005) | **SPECIFIC REQUIREMENTS** (Vanderbilt University Medical Center, 2008) | **DESIGN GUIDELINES** (Lindheim, Glaser, Coffin, 1972) |
|---|---|---|---|
| **INFANCY** (0-12 months) | Sensorimotor (0 to 2 years):<br>- Knowledge of the world only through sensory input;<br>- Start to develop representational and symbolic thought, since its absence disable them to speak or remember about past events;<br>- Progress from reflexive interactions with the environment to deliberate actions. | - Importance of soft music and low voice<br>- Possibility to play with soft toys and in front of the mirror;<br>- Dependence of parents to live: feeding, holding and talking;<br>- Possibility to see what the others are doing;<br>- Necessity of constant parental presence;<br>- Possibility to have personal belongings;<br>- Importance of colours and shapes;<br>- Implement a routine 'play time' in a space out of bedroom;<br>- Possibility to explore the environment around by crawling. | Provide feeding chairs for parents or nurses<br>Provide a large playpen or small enclosed alcove for crawling infants<br>Provide tables to pull up or walk around; or boxes to sit in, and toys<br>Provide soft and warm floor<br>Avoid locating electrical outlets or other hazards from the crawling area<br>Avoid visual barriers, enabling children to watch others activities and be watched by nurses<br>Use of textured and patterned materials |
| **TODDLERS AND PRESCHOOLER** (1-6 years) | Preoperational (2-7 years):<br>- Construction and quick development of mental representations in language, artwork and play;<br>- Emergence of intuitive | - Great importance of play;<br>- Possibility to ride tricycles, to jump from low heights, or to kick a ball;<br>- Possibility to paint, draw and do other artwork;<br>- Possibility to play imaginative games; | Avoid visual barriers for a better visual monitoring<br>Use of glazed partitions (preference for tempered glass or unbreakable plastic)<br>Locate heaters, electrical outlets and other potential hazards out of reach |

| AGE GROUP | COGNITIVE DEVELOPMENTS (Piaget theory, in: Littlefield-Cook, Cook, Berk and Bee, 2005) | SPECIFIC REQUIREMENTS (Vanderbilt University Medical Center, 2008) | DESIGN GUIDELINES (Lindheim, Glaser, Coffin, 1972) |
|---|---|---|---|
| | thought based on personal experience;<br>- Inability to take another person's perspective;<br>- Idea that objects have conscious life and feelings;<br>- Notion that natural events<br>- or objects are under the control of people or superhuman powers;<br>- Inability to solve conservation problems, since they only focus on one aspect at a time instead of taking into account several aspects;<br>- Lack of reversible thought. | - Possibility to move objects and create structures that symbolize imaginary things, such as animals or buildings;<br>- Start to be able to take care of self-daily hygiene;<br>- Importance of parental presence for social interaction and positive reinforcement;<br>- Necessity to set limits and provide structure;<br>- Possibility to care personal belongings to feel safe;<br>- Have power of choice;<br>- Start to get some independence from parents; | Avoid pointed objects and corners in the lower four feet |
| | | | Provide electrical controlled cribs to avoid children to climb out |
| | | | Provide ways of communication, such as telephones |
| | | | Locating windows in a position that allows children to see over |
| | | | Design low ceiling heights in alcoves and high ceiling for adults areas |
| | | | Lower windows and mirrors to a position where children can see |
| | | | Make toilets visible and easily accessible with child- size sinks and toilets |
| | | | Design warm, easily cleaned and textured floor, which can distinguish different areas, such as work and play |
| | | | Provide lightning near floor since children use the floor as a table |
| | | | Provide a private place for children to save their personal belongings |
| | | | Connect the play area with an outdoor area, toilets and a kitchenette for snacks. Easy to supervise |

| AGE GROUP | COGNITIVE DEVELOPMENTS (Piaget theory, in: Littlefield-Cook, Cook, Berk and Bee, 2005) | SPECIFIC REQUIREMENTS (Vanderbilt University Medical Center, 2008) | DESIGN GUIDELINES (Lindheim, Glaser, Coffin, 1972) |
|---|---|---|---|
| | | | Take attention on designing different heights because of children in wheelchairs |
| **GRADE SCHOOL CHILDREN** (6-12 years) | Concrete Operations (7 to 11 years):<br>- Logical though is more objective, however it is limited to concrete and tangible objects and experiences;<br>- Ability to solve conservation problems, presenting a concrete operational thought, where multiple aspects are considered;<br>- Focus on dynamic transformations. | - Possibility to play board games and videogames;<br>- Keep social contact with friends become increasingly important;<br>- Possibility to join group activities make them feel safe;<br>- Increase awareness about school;<br>- Privacy;<br>- Chance to personalize a space;<br>- Have power of choice;<br>- Provide activities and games to make the environment more friendly. | Provide electronic devices for children to keep in touch with family and friends |
| | | | Provide a schoolroom able to accommodate a group of 8 to 12 children, fully equipped to allow weakened or handicapped patients to participate |
| | | | Provide a soundproofed room suitable to play music |
| | | | Provide play areas and activities suitable for handicapped children, such as basketball, horseshoe between others |
| | | | Include a place for studying, entertainment and storage near each bed |
| | | | Provide a place for own personalisation |
| | | | Provide a multipurpose room for different projects and activities to coexist |
| **ADOLESCENTS** (12 – 18 years) | Formal Operations (11 to 18 years):<br>- Start to emerge | - Possibility to play board games and videogames; | Enable choice between single, double or four-bed rooms |

| AGE GROUP | COGNITIVE DEVELOPMENTS (Piaget theory, in: Littlefield-Cook, Cook, Berk and Bee, 2005) | SPECIFIC REQUIREMENTS (Vanderbilt University Medical Center, 2008) | DESIGN GUIDELINES (Lindheim, Glaser, Coffin, 1972) |
|---|---|---|---|
| | abstract thought and hypothetic-deductive reasoning;<br>- Emergence of egocentrism seen in the personal fable and imaginary audience | - Keep social contact with friends is extremely important;<br>- Possibility to use electronic devices to be in contact with friends;<br>- Independence and privacy;<br>- Continue to follow school subjects;<br>- Be involved in medical responsibilities and decision-making. | Provide a bedroom space for teenagers to personalize and accommodate their personal possessions (hanging, shelf and drawer space) |
| | | | Design a pleasant room for socialisation with low light levels, soft floor and view through a quiet garden |
| | | | Make bathrooms attractive places for dressing and self-care |
| | | | Include a laundry space, since teenagers usually like to take care of their own clothes and personal belongings |
| | | | Design a teen space free of visual supervision, with a comfortable floor for sitting, acoustically isolated and with changeable furniture, decorations and lightning |
| | | | Include a day-room for multi-purpose activities |
| | | | Provide a hospital schoolroom for adolescents |

Source: Children hospital. The role of architecture in children recovery and development. Technico Lisboa.

## 2.4 INFLUENCING FACTORS AND DESIGN IMPLICATIONS

From the studies it is analyzed that how design outcome can improve hospitalized children's well-being. The result is being separated in different areas and influencing factors:

### 2.4.1 Sense of control

Generally there is a lack of it in hospitals. When one is dependent on others and experiencing unusual and uncontrollable events, the stress increases and the most effective way to suppress it is to provide the patient( in our case children) with choice.An environment that is responsive to children needs helps in their development.

**a) Way finding**: It allows users to easily identify where they are, avoiding the sensation of confusion or being lost. The design of clear pathways, with areas distinguished by different materials, colours and specific landmarks and with proper signage.

**b) Privacy**: By designing single bedrooms and other rooms for private activities, allows users to be alone or to have a private conversations in privacy.

**c) Personalization**: Feel closer to the loved ones by the inclusion of picture boards, lockable storage and shelves, allow patients to keep their personal belongings and set their rooms to some extent according to their choice and feel home like.

**d) Scale**: The human scale is the right fit between the size and quality of spaces and perceptual capabilities and the physiological characteristics of man. Design spaces according to the scale of the children, allowing patients to feel that they belong to the place.

**e) Form**: Physical forms influences once learning and his senses; therefore, it is possible to express certain information and concepts through certain form. According to the child psychology, children are more attracted by curve, abstract, and circular forms, therefore designing accordingly interest's children more.

### 2.4.2 Social support

It is one of the most important parameter for children. The deprivation ofsocialization, especially from parents, can effect children emotionally. For this reason parents should be allowed to stay with their children all the time, providing adequate facilities for them to fulfill their everyday needs. Other social rooms are also important for children to interact with other children or adults.

### 2.4.3 Positive distractions

As day time is long and difficult to pass, therefore during the day it is necessary to distract children from negative thinking about patient's struggling and disease.
**a) Play**: the design of different playrooms let children explore and interact with various things adding to their knowledge and enjoyment.

**b) Art**: does not have proven positive health outcomes in children yet;

**c) Nature**: Providing a natural space nearby allows children to feel free and active. For different activities and options, gardens should be well equipped.

### 2.4.4 Sensorial dimensions

In hospitals these are essential to be taken care of whether visual , acoustic, smell, taste,feel(texture)

**(a)Visual**
**(i) Light**: Light is necessary for any visual perception. Light is important for humans not only physically but also have psychological effect. Daylight increases melatonin levels and generates positive mood. Therefore the building orientation and windows provision is really important. Not only natural light but also artificial light should be considered as it is controllable and can be used as a distraction for children.

**(ii) Colour**: Different colours have different psychological effect on moods of each person. According to literature study children have a preference for mid blue-green tones.

**b) Acoustic dimensions**: Sense of hearing defines experience and understanding of space. Noise increases stress and sleep thus increases blood pressure. By providing single bed wards, using high absorbing materials and eliminating noise sources can produce effective results.

**c) Smell**: Providing green area, plants ,flowers create good atmosphere and improves air quality as medicine smell causes discomfort and even adds to the sickness.
Medicine smell causes discomfort and even adds to the sickness.

### 2.4.5 Age Appropriate Environments

To correctly answer the different levels of cognition age appropriate environments are needed. Different activities and spaces are demand of various age group to improve socialization and integration. Children are more comfortable and interact with same age group and level of cognition. A children hospital designed according to child psychology can effect patients mind positively and help in the healing process.

# CHAPTER 3

# PROBLEMS AND ISSUES

## 3.1 PROBLEMS AND ISSUES

Nowadays due to high land and construction cost buildings are made from commercial point of views in order to gain profit from it. Due to increase in population and pollution main emphasis is laid how to make buildings energy efficient or green building. Though it is important to protect the environment but it is more important to keep our focus on the well being of the people because without humans buildings are of no use as it is made for the people. Among the humans the most important are the children as they are our future and their mental and physical development is of utmost importance to us. Children's development depends on their health. A healthy child both physically and mentally develops well. When the word health comes in our mind simultaneously hospitals come to our mind. But hospital is a place where no one likes to go as it is associated with stress and pain. Moreover hospitals are the last option of children to visit. Mainly hospitals are made keeping in mind its functionality and less importance is given to the psychological effect it will have on the user. The environment near children affects them psychologically. Stressful, gloomy, sad environment of hospital have negative effect on the children. A child goes to hospital for healing but the environment over there can effect the child negatively.Therefore it is necessary to provide the children with the environment which will have a positive effect on the child.It can be done by designing hospital according to child psychology ,according to their likes and not according to the perspective of the adults.

# CHAPTER 4

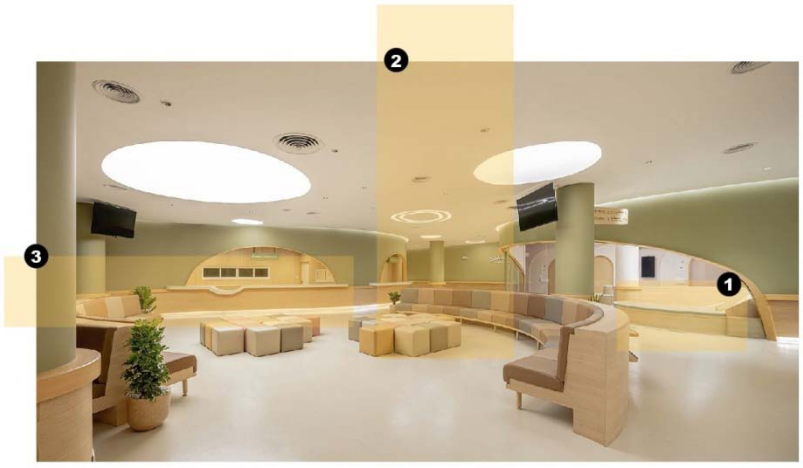
# CASE STUDIES

## 4.1 EKH CHILDREN'S HOSPITAL

### 4.1.1 Introduction

**Architect:** IF( Integrated Field)
**Location:** SamutSakorn, Thailand
**Floor Area:** 7200sq.m.
**Storey Building:** 5storeys
**Hospital Bed Number:** 54 Beds
**DESIGN CONCEPT**
**Design Philosophy:** Playing is healing
**Key Concept:** Children Dimension
Design approach is to make EKH CHILDREN HOSPITAL a 'fun' place according to children's mindset.

### 4.1.2 Concept and planning




1. Wood Decoration 2. Curved Lines 3. Children Scale

Figure 4. 1 Interior Perspective, Waiting Area, EKH Children's Hospital
Source: https://healthcaresnapshots.com/projects/6802/ekh-childrens-hospital/

Figure 4.1 shows the main concept of designing according to children dimension. For example, curves along the walls are curved at a height of one meter, the average eye level

of children.The curves are not made perfect but drawn free hand so that a child can feel comfortable and relate to it.

There are 60 single rooms in ward having illuminated animals on the ceiling, four constellations—whale, rabbit, turtle and lion. The perforated steel plates on the building's exterior also have these animals patterns. Pastel colours are used to enhance children's imagination.

Figure 4. 2 Interior Perspective, Bedroom, EKH Children's Hospital
Source: https://healthcaresnapshots.com/projects/6802/ekh-childrens-hospital/

Figure 4. 3 Interior Perspective, Reception and play area, EKH Children's Hospital
Source: https://healthcaresnapshots.com/projects/6802/ekh-childrens-hospital/

In order to create a child friendly environment arches above doorways and seating areas are constructed according to children's body proportion., thus creating a built environment according to children's behaviors and preferences. It gives the sense of freedom to the young users. Near the pharmacy counter as a part of the layout of the 'waiting area', includes the 'play space'.so that children does not get bored during waiting time and the adults can watch over their children while waiting . A giant slider is situated right at the front of the entrance hall and transforming the waiting area of each clinic into a

playground.Indoor swimming pool and private place for sitting overlooking the pool is designed bringing nature inside. Cartoon murals on the wall creates interest for children while moving around the hospital. In order to give comfort to the children indirect light is used in all the hallways so that children are not disturbed by the excessive brightness.

### 4.1.3 Programing and Circulation

The diagram shows the patient and staff circulation. Also the department on each floor.

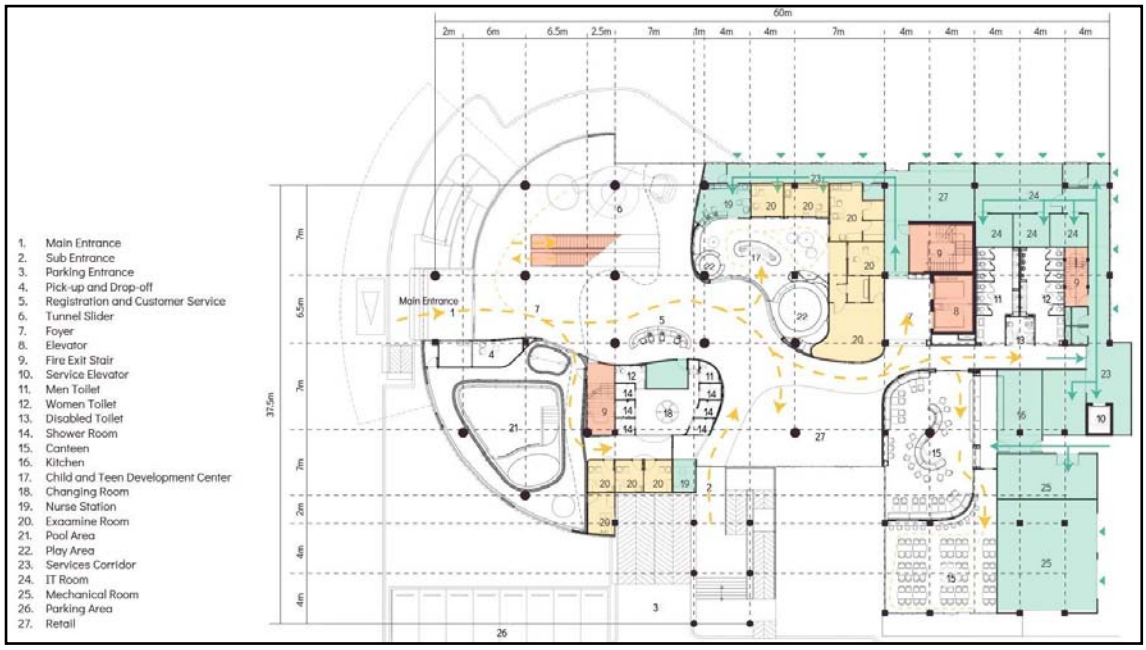



Figure 4. 4 First Floor Plan, EKH Children's Hospital
Source: https://healthcaresnapshots.com/projects/6802/ekh-childrens-hospital/

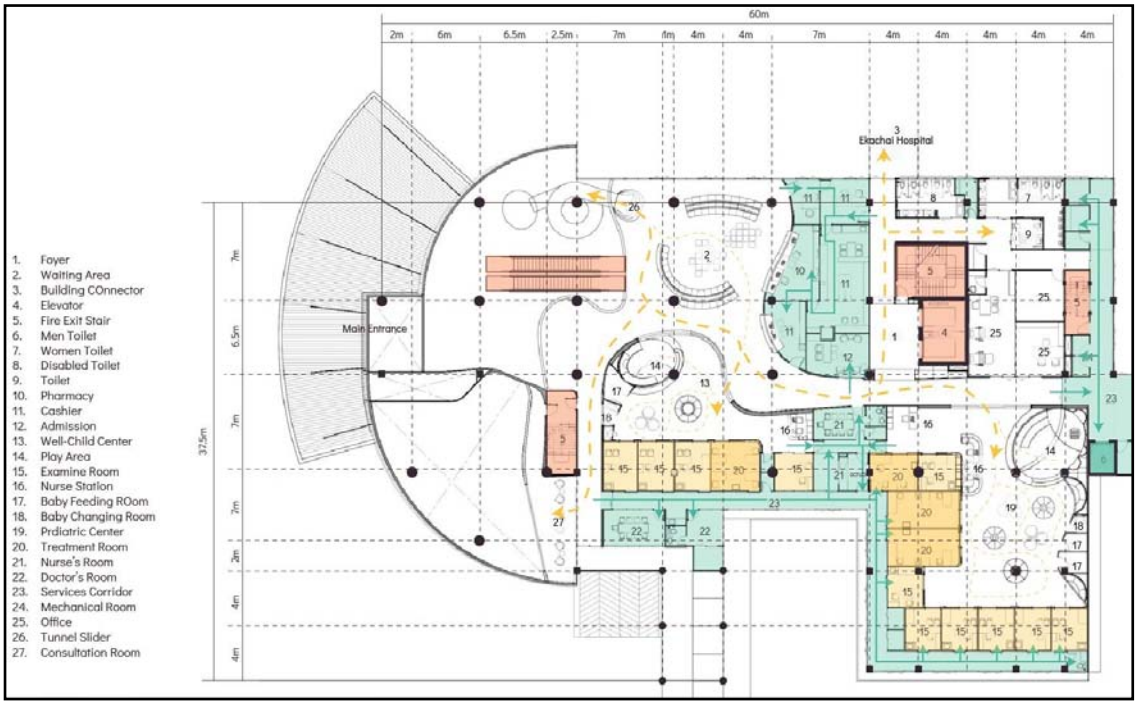



Figure 4. 5 Second Floor Plan, EKH Children's Hospital
Source: https://healthcaresnapshots.com/projects/6802/ekh-childrens-hospital/

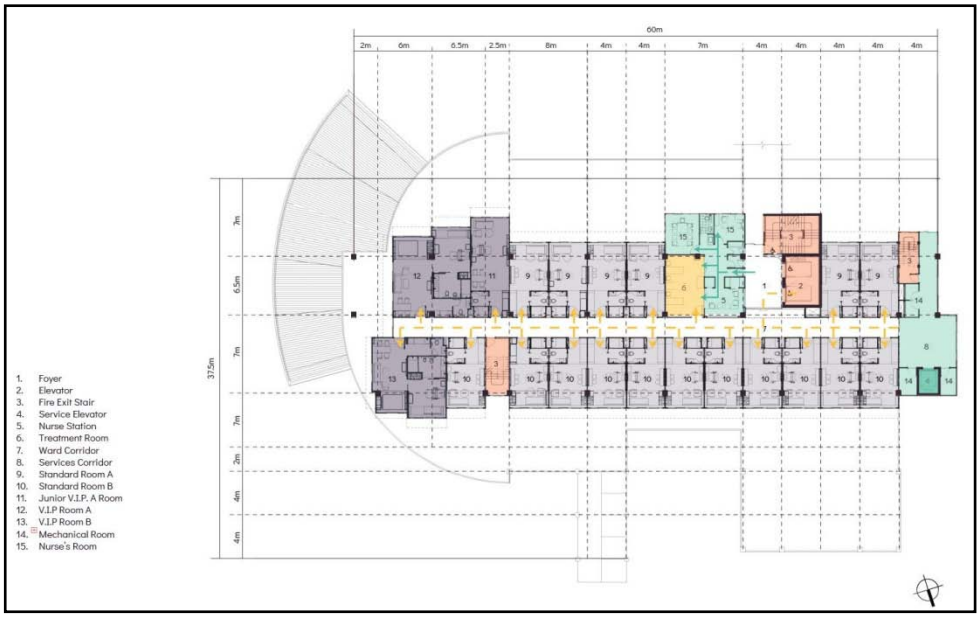



Figure 4. 6 Third Floor Plan, EKH Children's Hospital
Source: https://healthcaresnapshots.com/projects/6802/ekh-childrens-hospital/

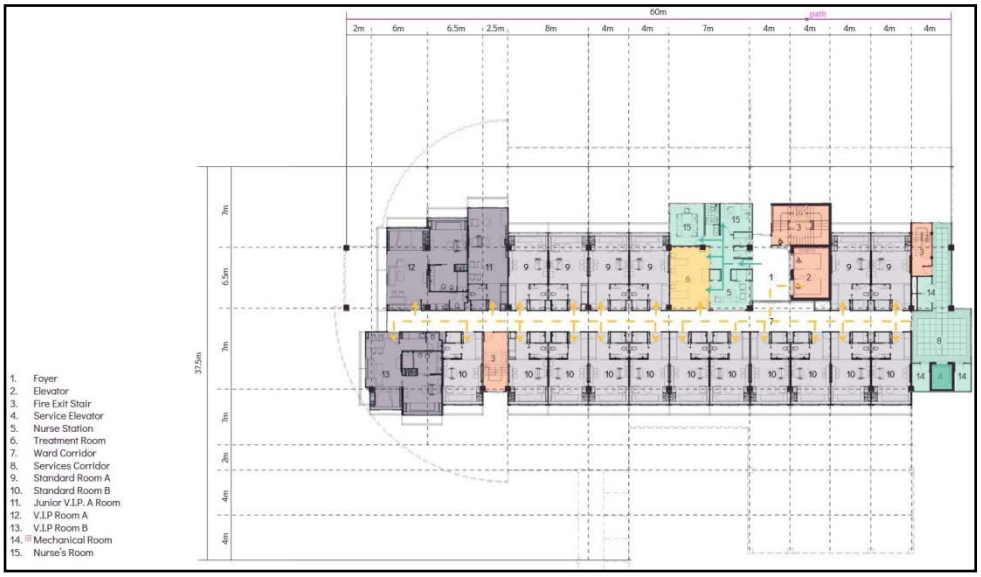
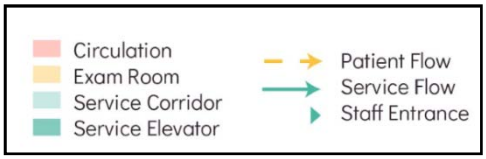



Figure 4. 7 Fourth and Fifth Floor Plan, EKH Children's Hospital



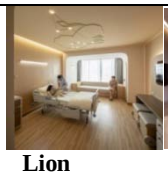
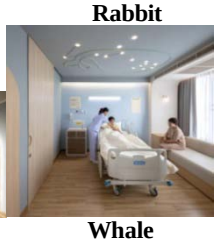

Source: https://healthcaresnapshots.com/projects/6802/ekh-childrens-hospital/

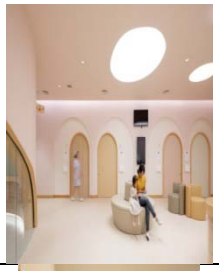
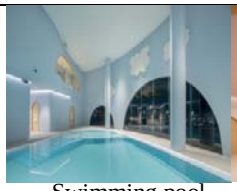
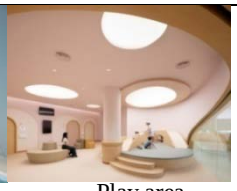
Figure 8 shows the facade of the building. Pastel colours are used in order to make it merge with the surrounding context. Curves are being used at the entrance to give a welcoming atmosphere to the children.

Figure 4. 8 Elevation, EKH Children's Hospital
Source: https://healthcaresnapshots.com/projects/6802/ekh-childrens-hospital/

### 4.1.4 Inferences

Table 4. 1 Inferences of EKH children's hospital

| **PARAMETERS ACCORDING TO CHILD PSYCHOLOGY** | | |
|---|---|---|
| **SENSE OF CONTROL** | | |
| Way finding | YES Simple black font and cartoon figures on white |  |
| Privacy & Personalization | 100% rooms are single bedded having illuminated ceilings with theme of four constellations – whale, rabbit, turtle and lion All rooms are provided on upper floors. |   **Lion** **Rabbit**   **Turtle** **Whale** |
| Scale | According to children's body proportion behaviors and preferences, Child friendly environment is created by providing arches above doorways and seating areas |   |

| | | |
|---|---|---|
| Form | Freehand Curves are used |  |
| | | |
| **SOCIAL SUPPORT** | | |
| Socialization spaces | Play area provided in the waiting area enabling interactions between parents and children.While children are playing adults can watch. |  |
| Meeting moments | YES |  |
| Family spots | YES | |
| | | |
| **POSITIVE DISTRACTIONS** | | |
| Play | At the front of the entrance hall a giant slider is situated transforming the waiting area into a playarea. It also includes indoor swimming pool and private place for sitting. |  Swimming pool  Play area  Reading area  Slide |
| Art | Cartoon murals on the wall |  Waiting area  Play area  Dining area |

| | | |
|---|---|---|
| Nature – direct or indirect | For comfortable environment and healing indirect nature is provided.View and light from windows in every room. |   View to outside a) Ward b) Waiting and play area |
| | | |
| **SENSORIAL DIMENSIONS** | | |
| Light | indirect light in all the hallways. |  |
| Colour | The pastel colours are used to encourage children's imagination. |  |
| Acoustic dimensions (Noise) | Nothing specific | |
| Smell | Nothing specific | |
| | | |
| **AGE APPROPRIATE ENVIRONMENT** | Spaces created for different age group |   Reading area Playing area |
| | | |

Source: Author

## 4.2 PHOENIX CHILDREN'S HOSPITAL

### 4.2.1 Introduction

**Hospital Bed Number**: 457 Beds
**DESIGN CONCEPT**
**Design Philosophy**: The big idea for the campus is to create a welcoming oasis that provides shade and healing while at the same time emulates the natural beauty of the surrounding, mountains and desert.
**Key Concept:** Visual / Light/Colour

### 4.2.2 Concept and planning

Figure 4. 9 Exterior view of Phoenix children hospital

To create a welcoming oasis that provides shade and healing while at the same time emulates the natural beauty of the surrounding, mountains and desert is the main concept for the Phoenix Children's Hospital The design concept for the Phoenix Children's Hospital is. The patient rooms and many public spaces such as corridors and waiting areas are provided with beautiful views. To preserve ease of navigating the planning of the campus is based on a north-south and east-west axis. Different areas it also includes markers.

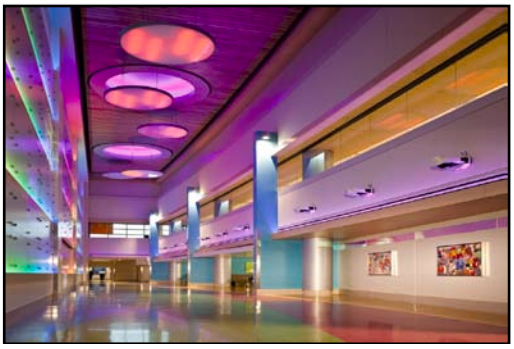


Figure 4. 10 Corridor view includes colour palettes, wall murals to guide the way
Source Figure 4.9 & Figure 4.10 : https://www.archdaily.com/220749/phoenix-childrens-hospital-hks-architects

The ambulatory and inpatient facilities are providd in one tower. To decrease the travel distances between various parts of the facility grouping of various programs is done within this tower. It also improves orientation. A sail punctuates the façade and enters into the three story atrium below bisecting the interior. This sail is a beacon that illuminates with bright colors making the interior glow from within and thus welcomes families into the facilities. The facility glows at night from the exterior, to be seen from the community.

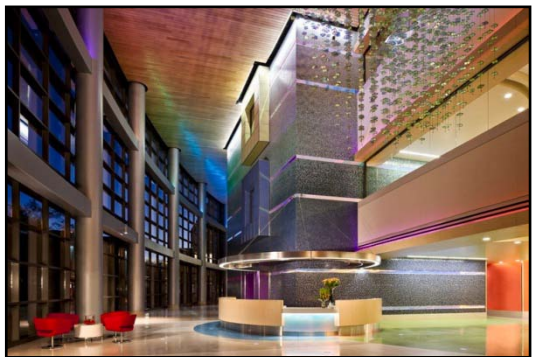


Figure 4. 11 Atrium of Phoenix children hospital

**Source: https://www.archdaily.com/220749/phoenix-childrens-hospital-hks-architects**

Colours and lighting is used to provide cheerful environment.To reduce the grand scale of the building the tower is divided into thre sections. The distinct tower is designed to reflect a night-blooming desert flower.To give the children control over the environment only private ,single bedded rooms with amenities are provided. For family members sleeper sofa and seating are is provided in each room. At most of the places curvilinear form is being used. To provide a comforting environment lush landscaping, brightly colored and playful sculptures, and indigenous plant life is used. Patient rooms and public spaces including elevators, play rooms and cafes, waiting areas and corridors are provided with the outside view. Corridors shows the way to various facilities by adding aesthetic and uplifting atmosphere due to inclusion of color palettes, wall murals and sculptures.

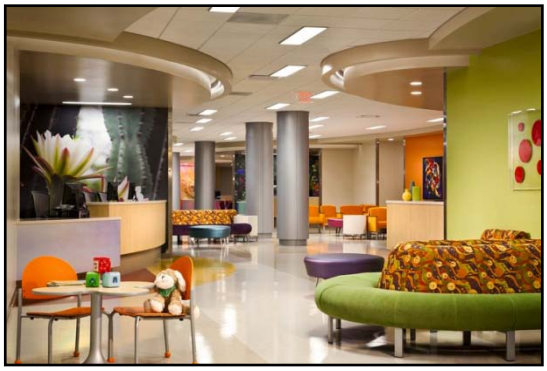


**Figure 4. 12 Waiting area of Phoenix children hospital**

Source: https://www.archdaily.com/220749/phoenix-childrens-hospital-hks-architects

The atrium besides providing an entrance and a stage for visitors also functions as a light wall. For social support a rooftop play garden, dining, mediation gardens are also provided.

Figure 4. 13 Waiting and play area of Phoenix children hospital

Figure 4. 14 Cafeteria of Phoenix children hospital

Figure 4. 15 Ward of phoenix children hospital

Source: https://www.archdaily.com/220749/phoenix-childrens-hospital-hks-architects

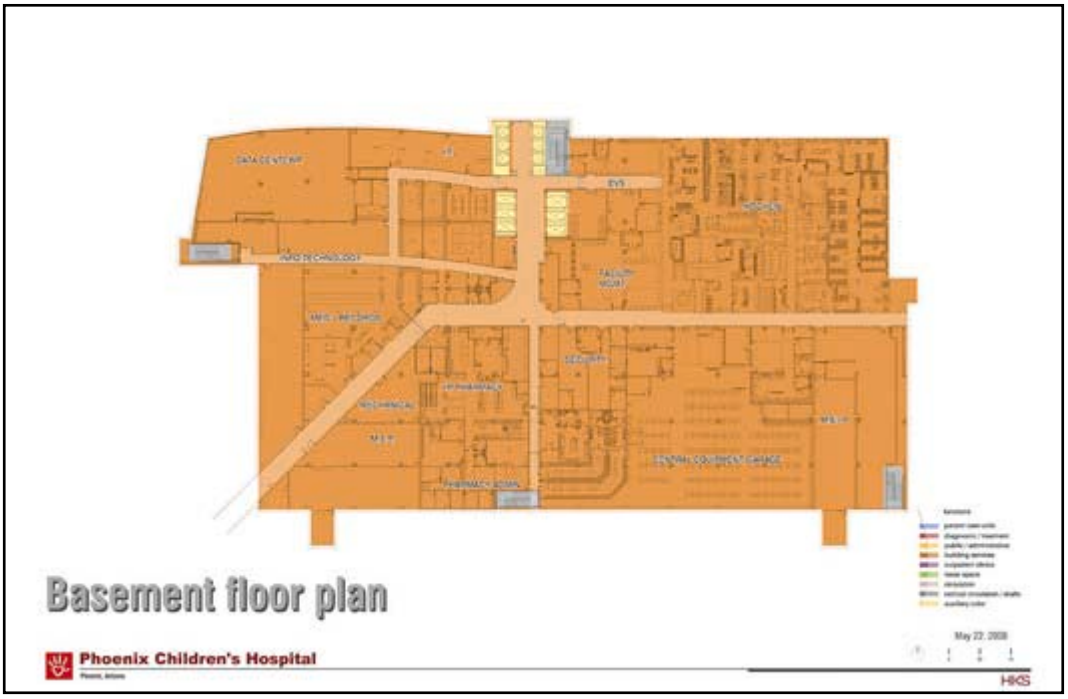



Figure 4. 16 Basement Plan, Phoenix Children's Hospital

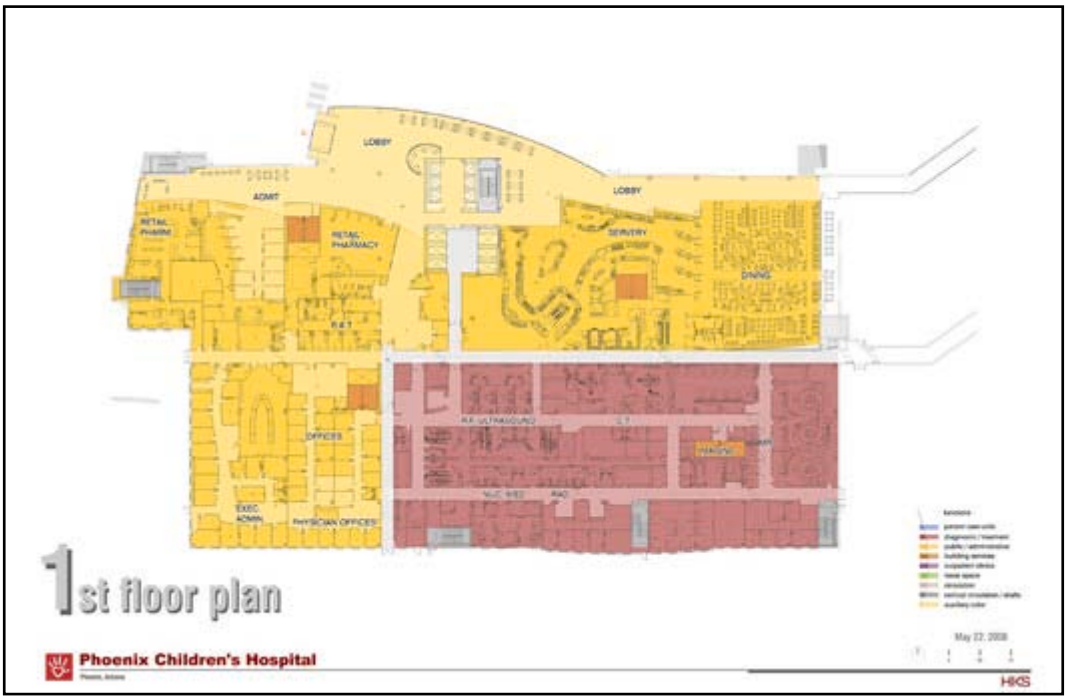



Figure 4. 17 First Floor Plan, Phoenix Children's Hospital

Source: https://www.archdaily.com/220749/phoenix-childrens-hospital-hks-architects

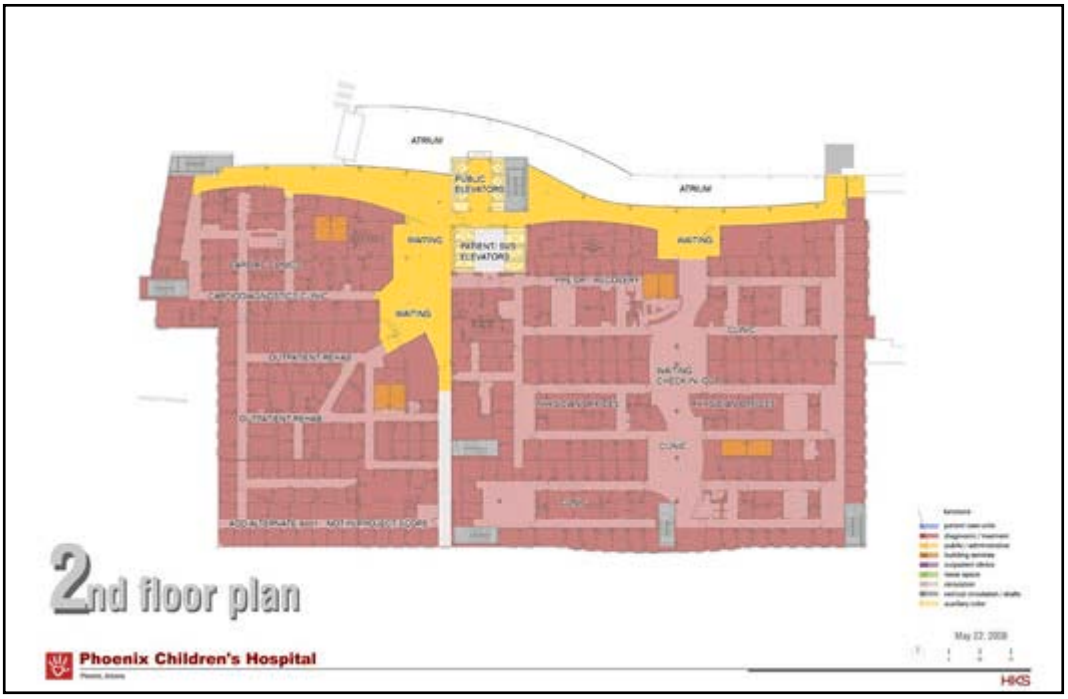


Figure 4. 18 Second Floor Plan, Phoenix Children's Hospital

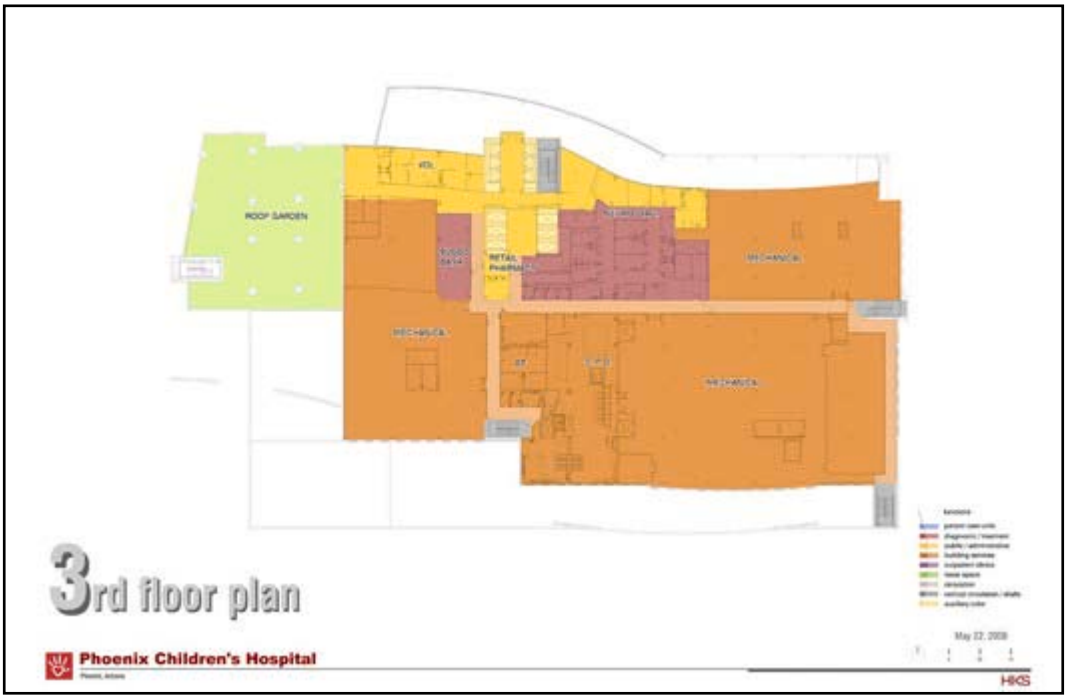


Figure 4. 19 Third Floor Plan, Phoenix Children's Hospital

Source: https://www.archdaily.com/220749/phoenix-childrens-hospital-hks-architects


Figure 4. 20 Fourth Floor Plan,  Phoenix Children's Hospital

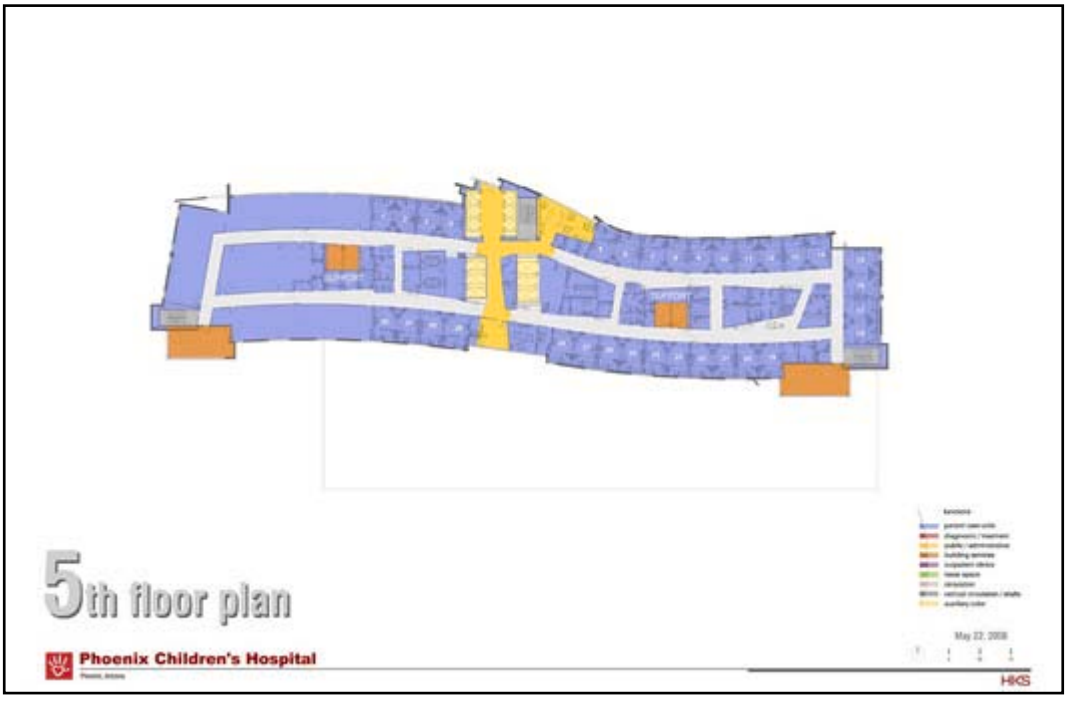



Figure 4. 21 Fifth Floor Plan,  Phoenix Children's Hospital

Source: https://www.archdaily.com/220749/phoenix-childrens-hospital-hks-architects

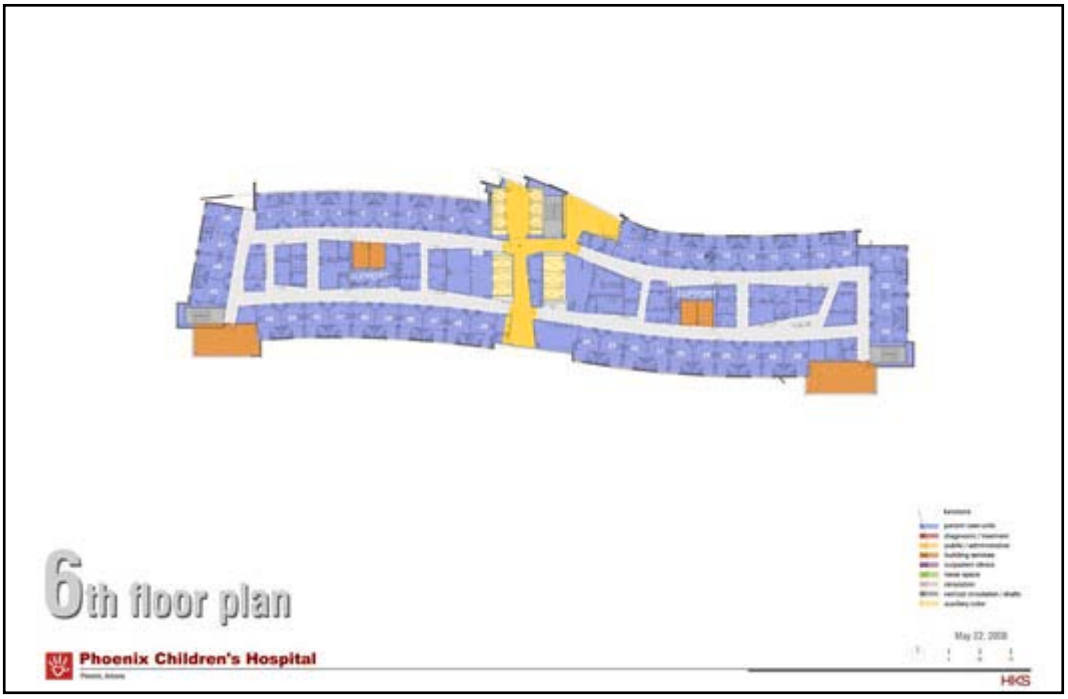



Figure 4. 22 Sixth Floor Plan,  Phoenix Children's Hospital

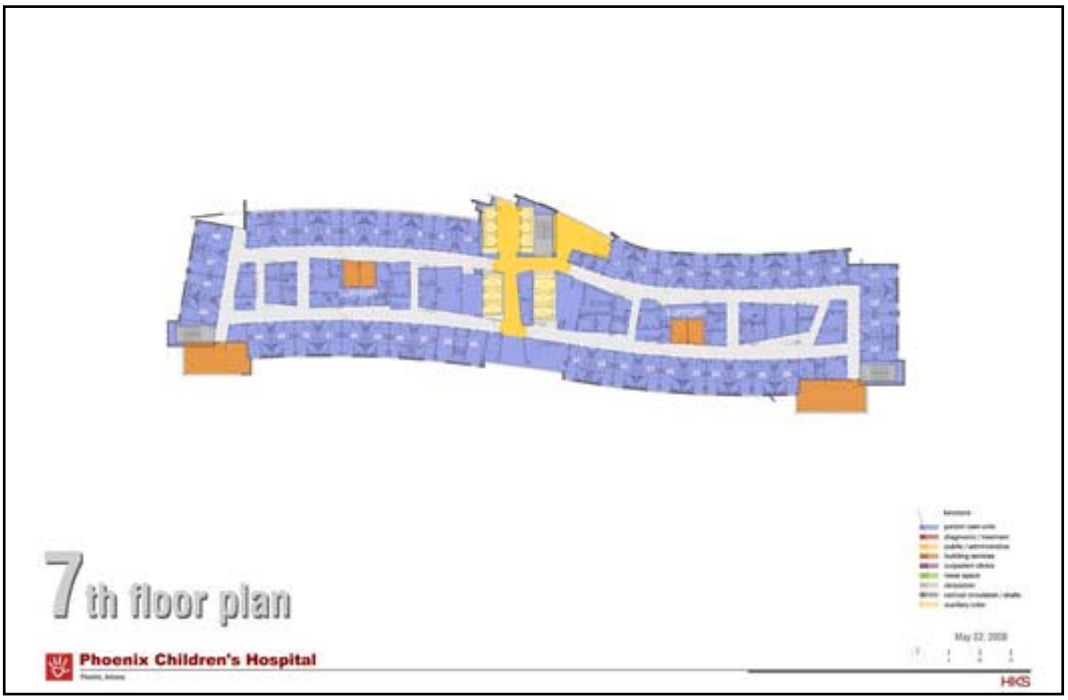



Figure 4. 23 Seventh Floor Plan,  Phoenix Children's Hospital

Source: https://www.archdaily.com/220749/phoenix-childrens-hospital-hks-architects

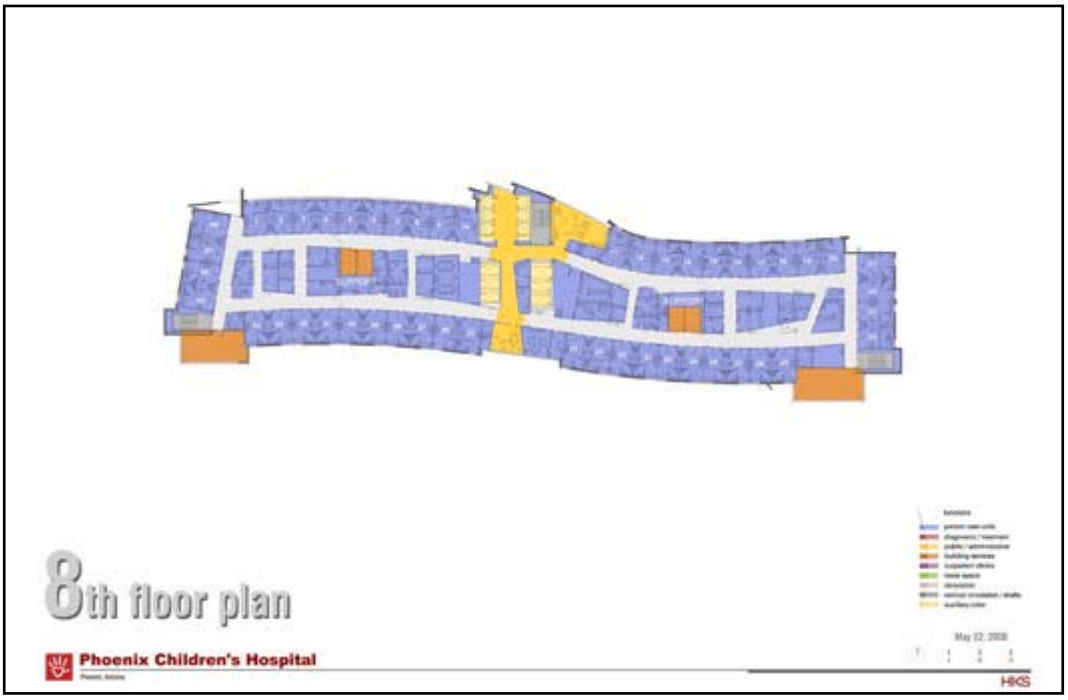



Figure 4. 24 Eighth Floor Plan,  Phoenix Children's Hospital

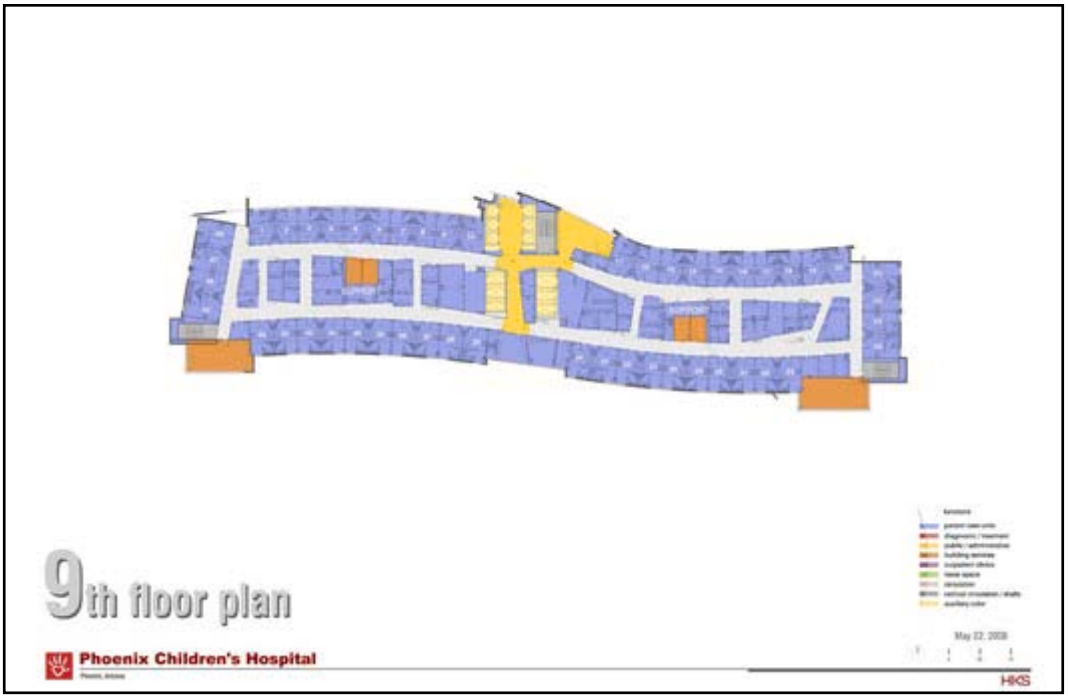


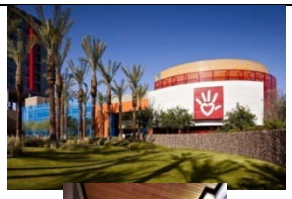
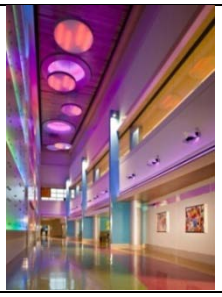

Figure 4. 25  Ninth Floor Plan,  Phoenix Children's Hospital

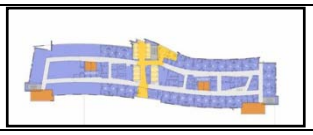
Source: https://www.archdaily.com/220749/phoenix-childrens-hospital-hks-architects

### 4.2.3 Inferences

Table 4. 2 Inferences of Phoenix children's hospital

| **PARAMETERS ACCORDING TO CHILD PSYCHOLOGY** | | |
|---|---|---|
| **SENSE OF CONTROL** | | |
| Way finding | Bright colours used |  |
| Privacy & Personalization | Private ,single bedded rooms with amenities are provided. For family members sleeper sofa and seating are is provided in each room.IPD provided on upper floors. |  |
| Scale | To reduce the impact of the building's scale the tower which reflects a night-blooming desert flower – is divided into three sections |  |
| Form | Curve |  |
| | | |
| **SOCIAL SUPPORT** | | |
| Socialization spaces | Family support lounge |  |
| Meeting moments | YES | |
| Family spots | YES | |
| | | |

| PARAMETERS ACCORDING TO CHILD PSYCHOLOGY | | |
|---|---|---|
| **POSITIVE DISTRACTIONS** | | |
| Play | Play room in IPD section. A roof top play garden, dining, mediation gardens also provided. |  |
| Art | Landscaping, brightly colored and playful sculptures, and plant life is provided.Also murals and sculptures are provided on the walls. |  |
| Nature – direct or indirect | Both direct and indirect NATURE –View of nature from patient rooms and public spaces including elevators, play rooms and cafes, waiting areas and corridors. |   |
| | | |
| **SENSORIAL DIMENSIONS** | | |
| Light | Day lightining in corridors |  |
| Colour | Corridors shows the way to various facilities by adding aesthetic and uplifting atmosphere due to inclusion of color palettes, wall murals and sculptures. |  |

| | | |
|---|---|---|
| **PARAMETERS ACCORDING TO CHILD PSYCHOLOGY** | | |
| | |  |
| Acoustic dimensions (Noise) | Wards on upper floors |  |
| Smell | Nothing specific | - |
| | | |
| **AGE APPROPRIATE ENVIRONMENT** | NO | - |
| | | |

Source: Author

## 4.3 THE ROYAL CHILDREN'S HOSPITAL

### 4.3.1 Introduction

**Architect:** Billard Leece Partnership, Bates Smart Architects with HKS as international advisors
**Location:** Melbourne, Australia
**FloorArea:**200000sq.m.
**Storey Building:** 6 storeys'
**Hospital Bed Number:** 350 Beds
**DESIGN CONCEPT**
**Design Philosophy:** Aims to be a 'park in a hospital, and a hospital in a park'
**Key Concept:** Use of natural environments to inject a calm and inspiring atmosphere into various parts of the new Royal Children's Hospital.

### 4.3.2 Concept and Planning

The design of Melbourne's Royal Children's Hospital (RCH) is nature inspired. The concept is to develop family centered hospital putting at the centre of the tertiary level paediatric care facility the children and their parents. To promote a restorative and healing environment for children and their families the building has been arranged formally and also provides the internal and external spatial experiences.


Figure 4. 26 Exterior view of Royal Children's Hospital
**Source: https://architectureau.com/articles/new-royal-childrens-hospital/**

In campus masterplan building has been split.A central street joins public gardens to the north and southwest. To enhance the connection between child and park the building has been north oriented breaking it away from the city grid and turning it to the park instead enabling the building to get the view of light-filled landscaped gardens around their full perimeter. To provide abundant natural light to enter all corners of the Hospital a narrow footprint has been used.

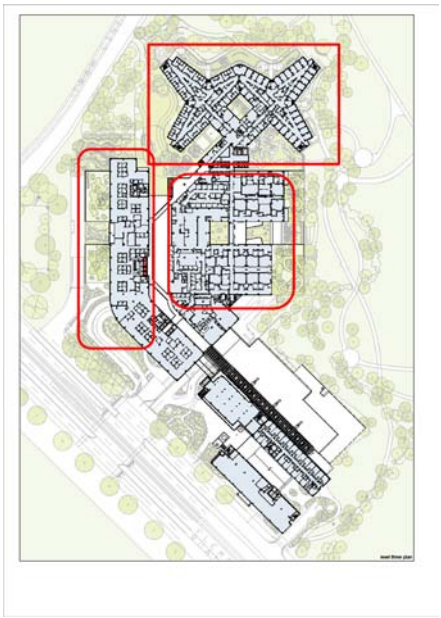


Figure 4. 27 Plan showing Landscaped gardens, zoning
Source: https://architectureau.com/articles/new-royal-childrens-hospital/

The Inpatient Building is designed in a star shape thus provides to more than 80per cent of the rooms with park view and the rest looking into the courtyards.

Figure 4. 28 Landscaped courtyards and natures view from interior
Source: https://architectureau.com/articles/new-royal-childrens-hospital/

On the Hospital's exterior façade specially designed glass sunshades are provided allowing a view from the patients bed of the activity in the grounds.

Figure 4. 29 Building in the form of a tree of royal Children's Hospital
Source: https://architectureau.com/articles/new-royal-childrens-hospital/

85% of the bedroom are single occupancy with kid-friendly modern hotel ambiance and amenities, providing privacy and are designed to give children calm and comforting environment. The star shaped tower consists of the rooms and this shape enables a courtyard view To avoid any disturbance to the patients all other medical procedures are conducted away from the room area. Providing space just for the family and calmness. Rooms are provided with sofa beds for family member to stay and desk for studying to encourage home like environment to the children.

Figure 4. 30 Single occupancy room with a view to outside
Source: https://architectureau.com/articles/new-royal-childrens-hospital/

To provide protection from the sun colouredand curved "leaf" blades are used.The curve panels not only act as sunshade but also creates a unique feature.

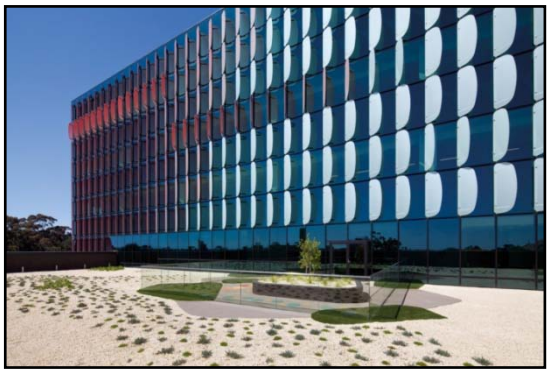


Figure 4. 31 Coloured leaf blades on the façade of the Royal Children's Hospital
Source: https://architectureau.com/articles/new-royal-childrens-hospital/

The six storey atrium and Main Street links the various areas of the Hospital together along with natural light coming in and with the view of the park. It creates a civic space having a two-storey coral reef aquarium, a meerkat enclosure, large-scale artworks, and various places to eat and meet with family, colleagues or friends. To distract and engage the imagination of all age groups various activities for children and family have resulted due to partnerships with the zoo, science museum and cinemas.

Figure 4. 32 Waiting cum play area- seats in the form of boulders at Royal Children's Hospital
Source: https://architectureau.com/articles/new-royal-childrens-hospital/


Figure 4. 33 Diagonally connecting bridges at Royal Children's hospital
Source: https://architectureau.com/articles/new-royal-childrens-hospital/

The hospital provides a holistic approach to sustainability – environmental, emotional, physical and psychological. It provides views of parks and courtyards, natural daylight.
A dynamic play of diagonal bridges and abundance of light from six storey atrium functions as the spine with focus on a landscaped garden mound and views to the Royal Park.

Figure 4. 34 Six storey atrium and main street view at Royal CHildren's Hospital
Source: https://architectureau.com/articles/new-royal-childrens-hospital/

Figure 4. 35 Multistorey sculpture in the atrium of Royal CHildren's Hospital and hanging art work for positive distraction
Source: https://architectureau.com/articles/new-royal-childrens-hospital/

For positive distractions art becomes the landmark feature, the giant fish tank is provided along with a colorful multi-story sculpture and provides positive distractions.

Figure 4. 36 The giant fish tank at Royal Children's Hospital
**Source: https://architectureau.com/articles/new-royal-childrens-hospital/**

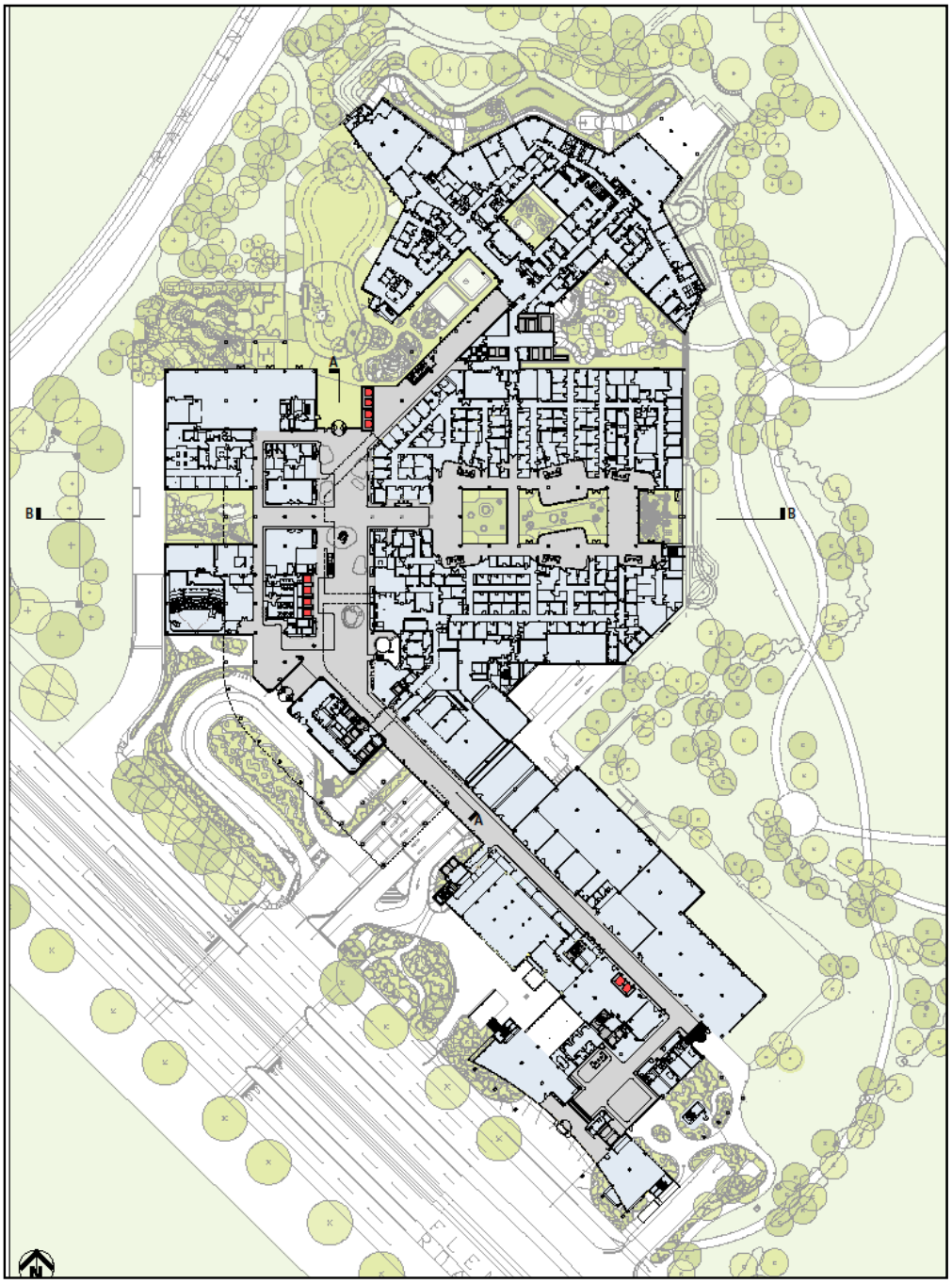



Figure 4. 37 Ground Floor Plan - Royal Children Hospital

Source: https://architectureau.com/articles/new-royal-childrens-hospital/
https://www.architectureanddesign.com.au/projects/health-aged-care/the-royal-children-s-hospital

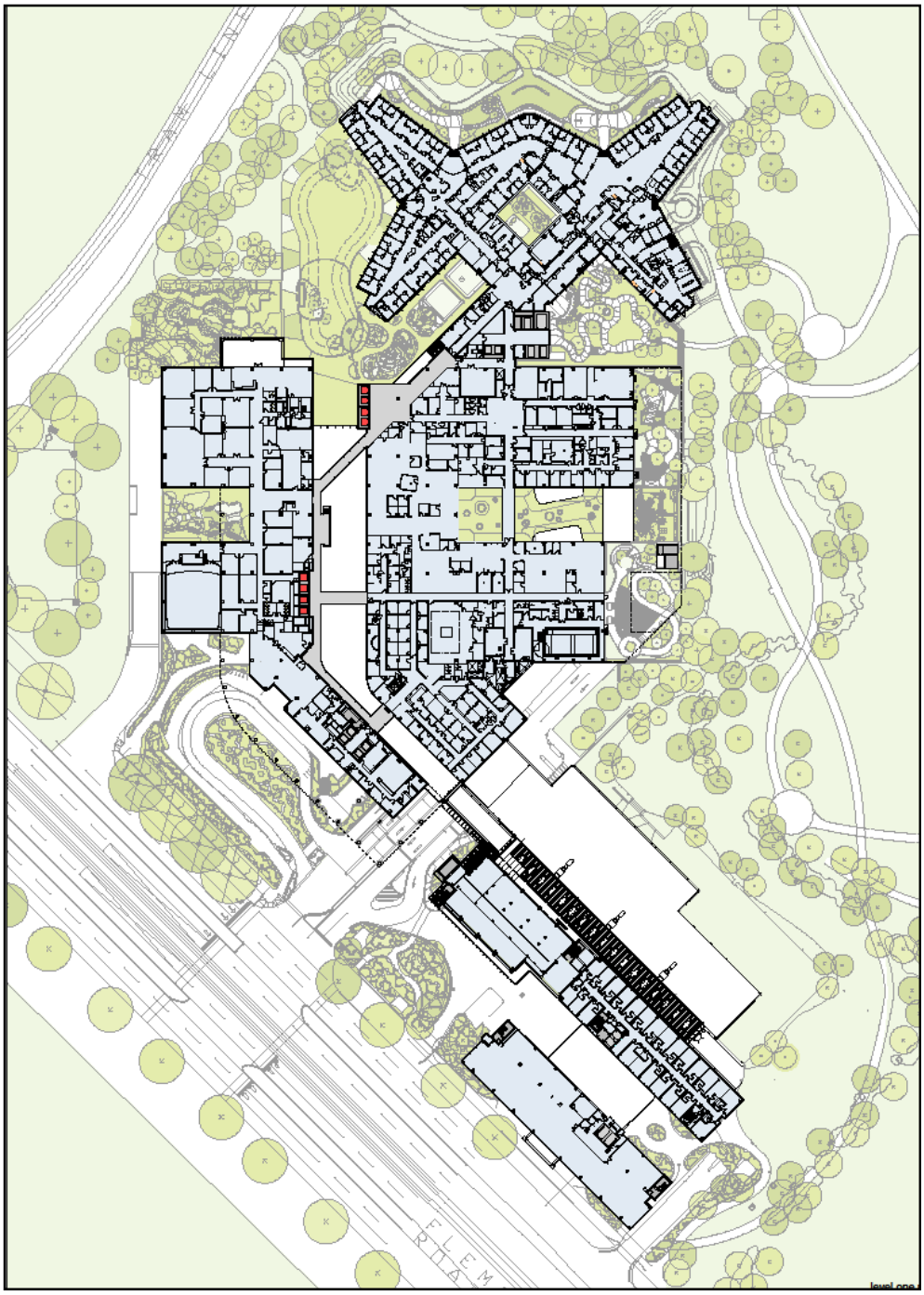


Figure 4. 38 First Floor Plan - Royal Children Hospital

Source: https://architectureau.com/articles/new-royal-childrens-hospital
https://www.architectureanddesign.com.au/projects/health-aged-care/the-royal-children-s-hospital

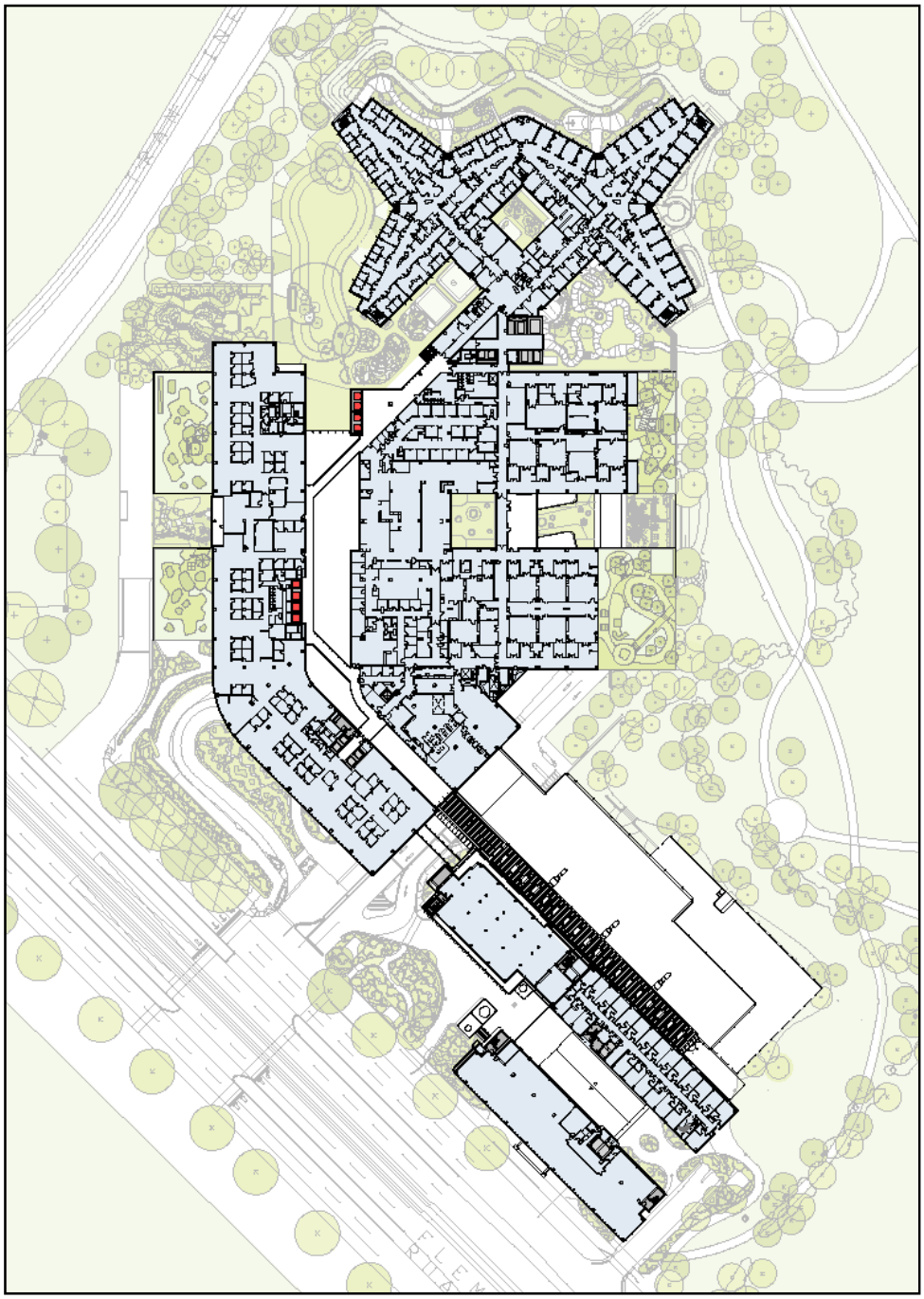


Figure 4. 39 Second Floor Plan - Royal Children Hospital

Source: https://architectureau.com/articles/new-royal-childrens-hospital/
https://www.architectureanddesign.com.au/projects/health-aged-care/the-royal-children-s-hospital

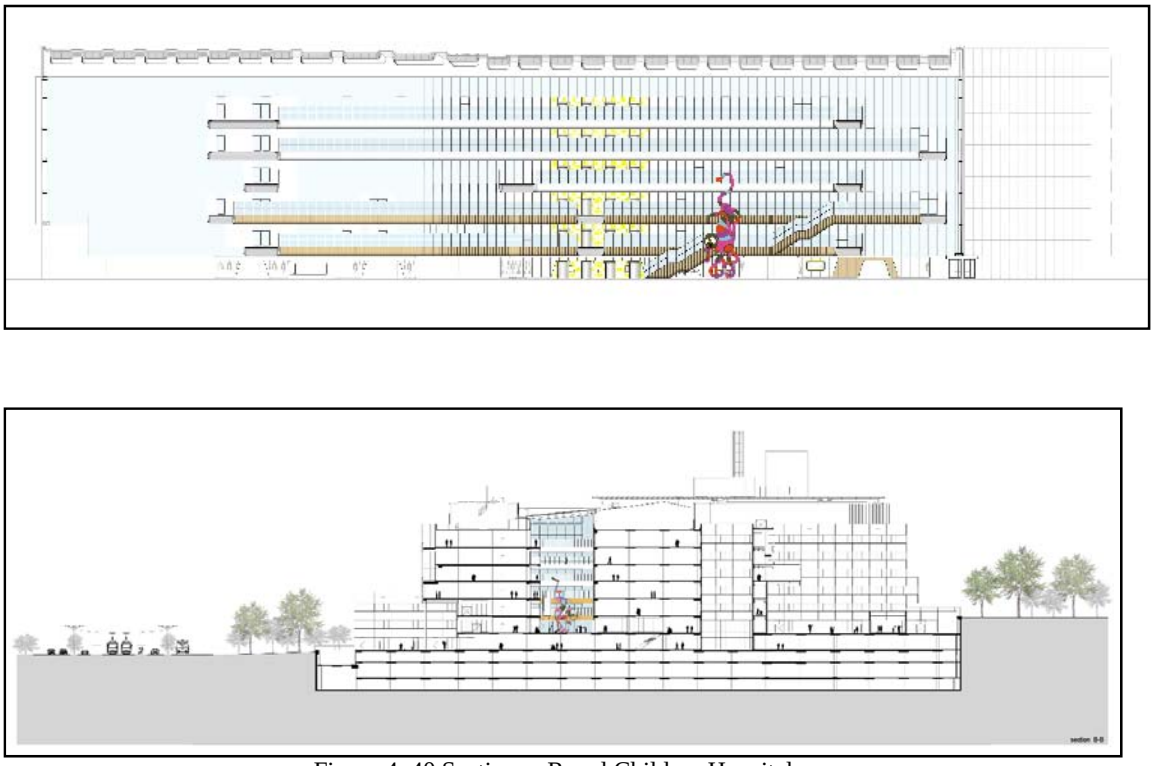


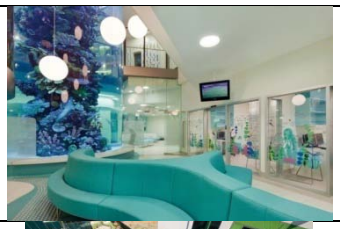
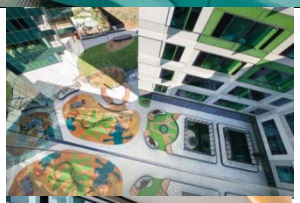
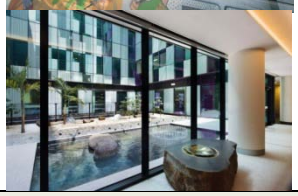
Figure 4. 40 Sections - Royal Children Hospital

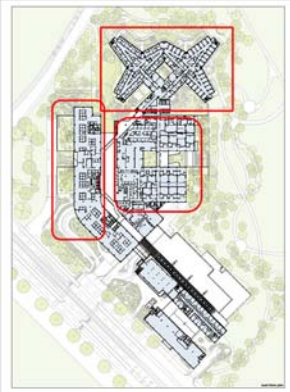
Source: https://architectureau.com/articles/new-royal-childrens-hospital/ https://www.architectureanddesign.com.au/projects/health-aged-care/the-royal-children-s-hospital

### 4.3.3 Inferences

Table 4. 3 Inferences of Royal children's hospital

| PARAMETERS ACCORDING TO CHILD PSYCHOLOGY | | |
|---|---|---|
| SENSE OF CONTROL | | |
| Way finding | White colour font with few figures on bright coloured background |  |
| Privacy & Personalization | 85% of the bedroom are single occupancy with kid-friendly modern hotel ambiance and amenities, providing privacy and are designed to give children calm and comforting environment.Provided on upper floors. |  |
| Scale | Atrium having grand scale. Disaggregated All the pieces of the building has been disaggregated, which resulted into lower scale of the building and making it more child-friendly. |  |
| Form | Abstract and diagonal |  An abundance of light and soaring six-story concourse with a dynamic play of diagonal bridges functions as the primary organizational spine with axial focus on a landscaped garden mound and views to the Royal Park. |
| | | |

| | | |
|---|---|---|
| PARAMETERS ACCORDING TO CHILD PSYCHOLOGY | | |
| SOCIAL SUPPORT | | |
| Socialization spaces | Lounge for families |  |
| Meeting moments | | |
| Family spots | | |
| | | |
| POSITIVE DISTRACTIONS | | |
| Play | The seats provided arein the shape of the boulders are coloured, shaped and textured so that childen can play. |  |
| Art | A colorful multi-story sculpture and huge fish tank is provided. |  |
| Nature – direct or indirect | Both direct and indirect NATURE-View of outside from all the rooms and corridors. Roof gardens provided. .NATURE IS THE MAIN CONCEPT |   |
| | | |
| SENSORIAL DIMENSIONS | | |
| Light | Access to natural, direct light. |  |

| | | |
|---|---|---|
| PARAMETERS ACCORDING TO CHILD PSYCHOLOGY | | |
| Colour | For interior bright colours used like- yellow,green, blue, orange, pink etc.The external façade of the building is designed to reflect colours from the surrounding trees and nature. |   |
| Acoustic dimensions (Noise) | Zoning done |  |
| Smell | Nothing specific | |
| | | |
| AGE APPROPRIATE ENVIRONMENT | NO | -- |
| | | |

Source: Author

## 4.4 RAINBOW HOSPITALS

### 4.4.1 Introduction

**Architect :** Ameya
**Location :** Banjara Hills,Hyderabad
**FloorArea:**160000sq.ft.
**Hospital Bed Number :** 220 Beds
**DESIGN CONCEPT**
**Design Philosopy:** Colourful Differences
**Key Concept :** Disney Characters

### 4.4.2 Concept and Planning

Figure 4. 41 External view of Rainbow hospital
Source: https://www.ameyadesign.com/portfolio/rainbow-hospitals-banjara-hills./

Hospitals are among the most depressing things. The feeling of illness ,view of other sick people is magnified by its ambience. The new Rainbow Children's Hospital in Banjara Hills has, tried to improve interiors and make visits to doctors less frightening with help of the Disney.

Figure 4. 42 Ward with colourful environment at Rainbow Hospital
Source: https://www.ameyadesign.com/portfolio/rainbow-hospitals-banjara-hills./

Walking into the colourful and spacious entryway of the hospital may sound cheesy but it brings smile to the children. The playground is provided in the waiting area so that children can play and parents can look over them. Wayfinding uses colours and floor patterns to make sure that everyone finds their way easily around the hospital The bright and welcoming. Most of the places height is single floor Entrance lobby and waiting area height is double. Neither direct or indirect space for nature. No view to nature is provided.

Figure 4. 43 Reception area with cartoons on the wall at Rainbow Hospital

According to the age the design concept varies in the hospital. In the neo-natal departments basic colours and shapes are used as it increases the curiosity of the babies.While Disney characters are used for the bigger kids like Cinderella and Snow White for girls and Marvel Universe and the Avengers for the boys. But the hospital has assumed the tastes based on the genders.

Figure 4. 44 Diseny character for child friendly environment at Rainbow Hospital

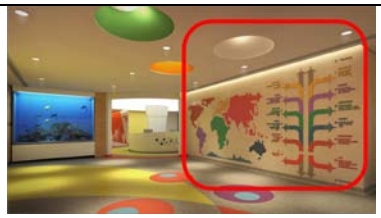
Figure 4. 45 Canteen area at Rainbow Hospital

The cafeteria too has plenty of characters — Disney and cartoons indulging in culinary expeditions, so that getting children may feel excited for the mealtime too.

Source: https://www.ameyadesign.com/portfolio/rainbow-hospitals-banjara-hills./

### 4.4.3 Inferences

Table 4. 4 Inferences of Rainbow hospital

| **PARAMETERS ACCORDING TO CHILD PSYCHOLOGY** | | |
|---|---|---|
| **SENSE OF CONTROL** | | |
| Way finding | Coloured graphics contibuting to art |  |
| Privacy & Personalization | 10% private rooms. Privacy not as much |  |
| Scale | No consideration for scale |  |
| Form | Circles used |  |
| | | |
| **SOCIAL SUPPORT** | | |
| Socialization spaces | No consideration | ---- |
| Meeting moments | NO | |
| Family spots | NO | --- |

| | | |
|---|---|---|
| **PARAMETERS ACCORDING TO CHILD PSYCHOLOGY** | | |
| | | |
| **POSITIVE DISTRACTIONS** | | |
| Play | No consideration | |
| Art | Disney Characters on wall |   |
| Nature – direct or indirect | No consideration | ---- |
| | | |
| **SENSORIAL DIMENSIONS** | | |
| Light | Artifical lights only |  |
| Colour | Lighter and brighter colours used |  |
| Acoustic dimensions (Noise) | Nothing specific | |
| Smell | Nothing specific | |
| | | |
| **AGE APPROPRIATE ENVIRONMENT** | considered different age groups and even gender<br>Basic colour and figuers for in neonatal and Disney characters for bigger age group |  Neonatal  Bigger age group |
| | | |

Source: Author

# CHAPTRE 5

# COMPARATIVE ANALYSIS

Table 5. 1 Comparative Analysis

| PARAMETERS ACCORDING TO CHILD PSYCHOLOGY | EKH CHILDREN'S HOSPITAL | PHOENIX CHILDREN'S HOSPITAL | THE ROYAL CHILDREN'S HOSPITAL | RAINBOW HOSPITAL | FINDINGS |
|---|---|---|---|---|---|
| **SENSE OF CONTROL** | | | | | |
| Way finding | YES Simple black font and cartoon figures on white | Bright colours used | White colour font with few figures on bright coloured background | Coloured graphics contibuting to art | Colourful Graphics to be used as wayfinding |
| Privacy & Personalization | 100% rooms are single bedded having illuminated ceilings with theme of four constellations – whale, rabbit, turtle and lion All rooms are provided on upper floors. | Private ,single bedded rooms with amenities are provided. For family members sleeper sofa and seating are is provided in each room.IPD provided on upper floors. | 85% of the bedroom are single occupancy with kid-friendly modern hotel ambiance and amenities, providing privacy and are designed to give children calm and comforting environment.Pr ovided on upper floors. | 10% private rooms. Privacy not a much | Prrivate room for personalization and home like feeling. For privacy rooms to be provided on upper floors |
| Scale | According to children's body proportion behaviors and preferences, Child friendly environment is created by providing arches above doorways and seating areas | To reduce the impact of the building's scale the tower which reflects a night-blooming desert flower – is divided into three sections | Atrium having grand scale. Disaggregated All the pieces of the building has been disaggregated, which resulted into lower scale of the building and making it more child-friendly. | No consideration for scale | Appropiate to child scale so that might not feel clastrophobic |
| ;Form | Freehand Curves are used | Curve | Abstract and diagonal | None | Use of circular and abstract form |
| | | | | | |

continued on page no.51

Table 5.1 (continued)

| **SOCIAL SUPPORT** | | | | | |
|---|---|---|---|---|---|
| Socialization spaces | Play area provided in the waiting area enabling interactions between parents and children.While children are playing adults can watch. | Family support lounge | Lounge for families | No consideration | Lounge for family |
| Meeting moments | YES | YES | YES | NO | YES |
| Family spots | YES | YES | YES | NO | Near waiting area and wards |
| | | | | | |
| **POSITIVE DISTRACTIONS** | | | | | |
| Play | At the front of the entrance hall a giant slider is situated transforming the waiting area into a playarea. It also includes indoor swimming pool and private place for sitting. | Play room in IPD section. A roof top play garden, dining, mediation gardens also provided. | The seats provided arein the shape of the boulders are coloured, shaped and textured so that childen can play. | No consideration | Play area, aquarium, slides, private sitting area, digital area. Areas for all age groups. Near waiting areas and also in IPD. Create psitive distractions by creating interesting corridors |
| Art | Cartoon murals on the wall | Landscaping, brightly colored and playful sculptures, and plant life is provided.Also murals and sculptures are provided on the walls. | A colorful multi-story sculpture and huge fish tank is provided. | Disney Characters on wall | Create graphics on wall floor and ceiling according to age and gender |
| Nature – direct or indirect | For comfortable environment and healing indirect nature is provided.View and light from windows in every room. | Both direct and indirect NATURE – View of nature from patient rooms and public spaces including elevators, play rooms and cafes, waiting areas and corridors. | Both direct and indirect NATURE- View of outside from all the rooms and corridors. Roof gardens provided. .NATURE IS THE MAIN CONCEPT | No consideration | Provide both direct and indirect contact with nature.Provide healing gardens. |
| | | | | | |

continued on page no.52

Table 5.1 (continued)

| | | | | | |
|---|---|---|---|---|---|
| **SENSORIAL DIMENSIONS** | | | | | |
| Light | indirect light in all the hallways. | Day lightining in corridors | Access to natural, direct light. | Artifical lights only | Play both with natural and artifical light |
| Colour | The pastel colours are used to encourage children's imagination. | Corridors shows the way to various facilities by adding aesthetic and uplifting atmosphere due to inclusion of color palettes, wall murals and sculptures. | For interior bright colours used like-yellow,green, blue, orange, pink etc.The external façade of the building is designed to reflect colours from the surrounding trees and nature. | Lighter and brighter colours used | Colours to be used according to child psychology |
| Acoustic dimensions (Noise) | Nothing specific | Wards on upper floors | Zoning done | Nothing specific | Provie wards on upper floors.Use of acoustic material to prevent privacy and personalizatio n and create home like environment |
| Smell | Nothing specific | Nothing specific | Nothing specific | Nothing specific | Proper ventilation from hygiene point of view and also will allow fresh air and indirect nature |
| | | | | | |
| **AGE APPROPRIATE ENVIRONMENT** | Spaces created for different age group | NO | NO | considered different age groups and even gender | Create Spaces for different children age group according to their psychology |
| | | | | | |

Source: Author

# CHAPTER 6

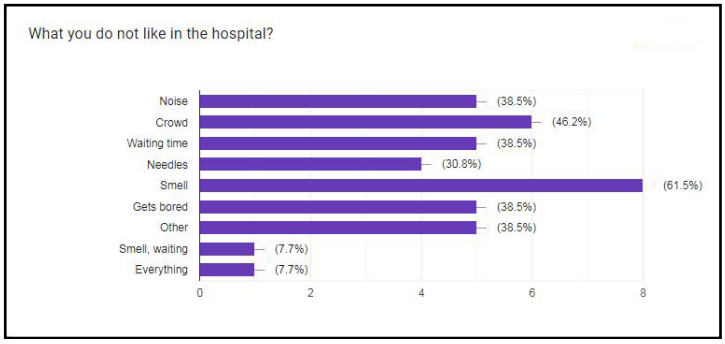
# ANALYSIS

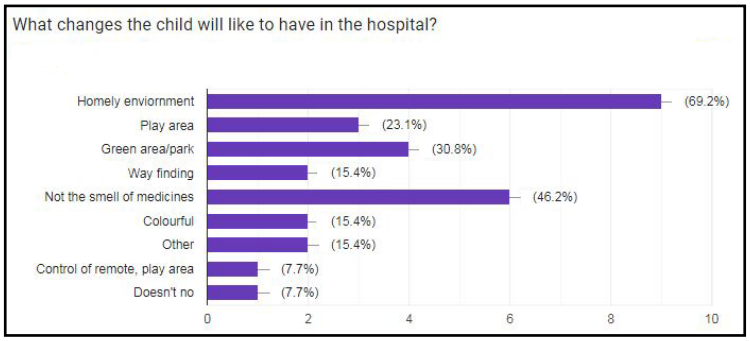
Table 6. 1Sample size

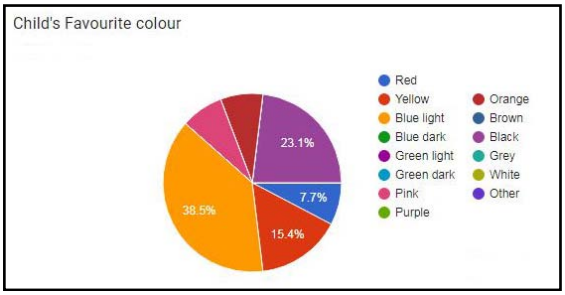
| S.No. | Age of Children (In Years) | No. of Children |
|---|---|---|
| 1 | 5 and 6 | 4 |
| 2 | 7 to 9 | 6 |
| 3 | 10 to 12 | 6 |
| 4 | 13 to 15 | 6 |
| 5 | 16 to 18 | 8 |
| Total Number of children | | 30 |

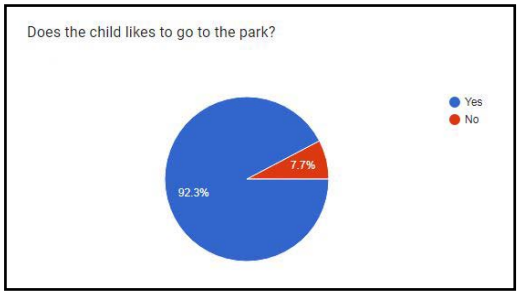
**Source : author**

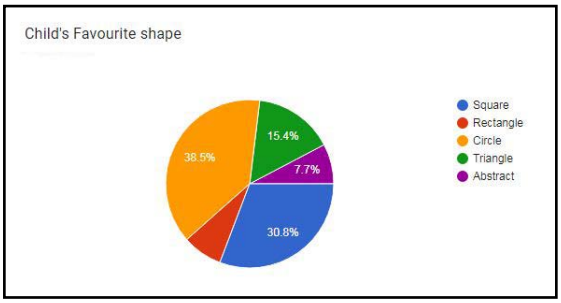
## 6.1 SURVEY

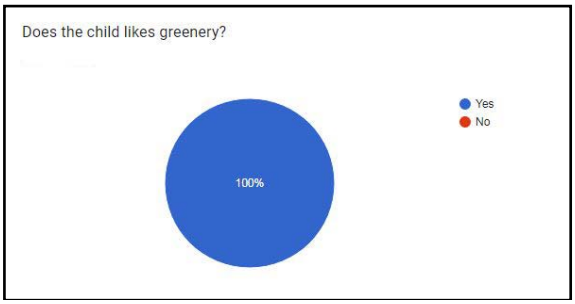


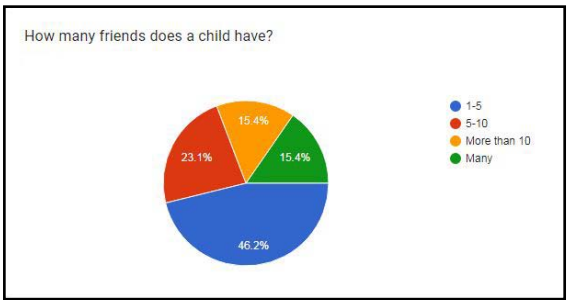



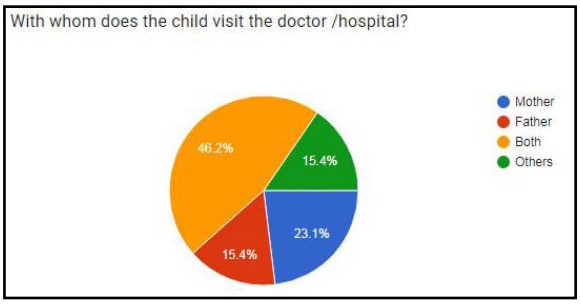

Child's Favourite colour
Red
Yellow
Blue light
Blue dark
Green light
Green dark
Pink
Purple
Orange
Brown
Black
Grey
White
Other
23.1%
7.7%
38.5%
15.4%

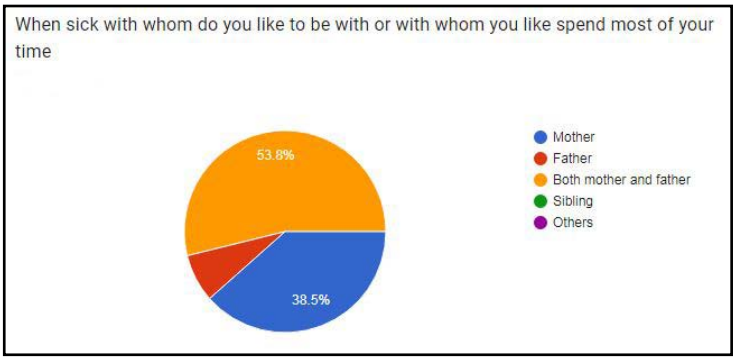

Does the child likes to go to the park?
Yes
No
7.7%
92.3%


Child's Favourite shape
Square
Rectangle
Circle
Triangle
Abstract
15.4%
38.5%
7.7%
30.8%


Does the child likes greenery?
Yes
No
100%


How many friends does a child have?
1-5
5-10
More than 10
Many
15.4%
23.1%
15.4%
46.2%


With whom does the child visit the doctor /hospital?
Mother
Father
Both
Others
46.2%
15.4%
23.1%
15.4%


When sick with whom do you like to be with or with whom you like spend most of your time
Mother
Father
Both mother and father
Sibling
Others
53.8%
38.5%

## 6.2 DRAWINGS


**List of items found most in the drawings** : Window,Clock,Air conditioner, Television, Curtains, Chair, Dustbin,Single bed, Double bed,Toilet,Shelves,Indoor Plants, Wall scenery,Telephone, Colours,Artifical Light.

## 6.3 FINDINGS

The findings from the literature are complemented by the findings from the survey and the drawings.

### 6.3.1 Sense of contol:

Personalization of space and homelike environment came out as one of the important factors where the child and parents feel comfortable, less stressful and are at ease and are able to find commonality in hospital to their home environment as is evident from the drawings. In most of them single room is preferred and shelves kept according to the children. Circle is most preferred shape by children around 38.5% selected circle as their favourite shape in survey.As circle or curve gies the sense of coziness and comfort.

### 6.3.2 Social Support:

Space for parents sleeping in the same room is provided in many drawings and also chairs for visitors are placed which shows that children do want privacy but also at the same time does not want to feel isolated and needs social support.

### 6.3.4 Positive Distractions:

Television set needed and also few toys, indoor games and also outdoor games is the requirement by the children in the hospital as told by children in writing and also from the personal interview with them.

The love of **arts** evident from the pictures or photos that can be seen hanging on the walls in the drawings.

Love for **nature** and view of the outside world is also evident as windows is the key requirement by the children in their drawings.92.5% likes to go to park and 100% of children from the survey loves greenry.

Along with pleasing indoors, Outdoor areas also play an important factor for relieving stress and healing for young patients. Connecting nature in hospitals is another way to provide opportunities for patients to move out in the lap of nature as nature is any ways healing and soothing for the mind and body. Whitehouse et al. (2001), suggested that integration of nature improves mood and hospital satisfaction

### 6.3.4 Sensorial dimensions:

Finding from the survey shows that 38.5% does not like noise, 61.5% does not like smell, and 46.5% does not like crowd. Therefore while designing care has to be taken for smell and noise reduction. Ambience to be cheerful, bright and colorful. 38.5% likes light blue colour and 23.1% prefer light green colour. Color is also an important aspect of the healing environment and is an element of visual stimulus. Application of colors as per the children's age can help them feel happy and cheerful in the space. In a study conducted by Coad and Coad (2008), it was found that the most preferred color scheme was of the mid blue-green type.

### 6.3.5 Age appropriate environment:

As the hospital will take care of patients up to the age of 16 or 18. Contemporary hospitals focus primarily on young children and less on adolescents psychology. As a result, adolescents may perceive the hospital environment as childish. In this respect, it is important not to use too specific themes. Themes can be used, but should be taken care and well thought of so that it does not looks childish.

Table 6. 2 Content analysis of drawings and survey by children

| Parameters | Sub- Categories | Drawing Details/Survey |
|---|---|---|
| **SENSE OF CONTROL** | Way finding | - Curtains<br>- Single Room<br>- Attach Toilet<br>- Small,cozy area<br>- Circle |
| | Privacy & Personalization | |
| | Scale | |
| | Form | |
| | | |
| **SOCIAL SUPPORT** | Socialization spaces | - Chair<br>- Double bed |
| | Meeting moments | |
| | Family spots | |
| | | |
| **POSITIVE DISTRACTIONS** | Play | - Toys<br>- Book Shelves<br>- Wall Pictures<br>- Window |
| | Art | |
| | Nature – direct or indirect | |
| | | |
| **SENSORIAL DIMENSIONS** | Light | - Window<br>- Lamp<br>- Blue/Green/Yellow Colours<br>- Single room<br>- Dustbin |
| | Colour | |
| | Acoustic dimensions (Noise) | |
| | Smell | |
| | | |
| **AGE APPROPRIATE ENVIRONMENT** | Different ages | - Video games<br>- TV<br>- Bookshelf<br>- Soft toys,Dolls,Cars |
| | | |

Source: Author

## 6.4 DISCUSSION

Our study tried to gain insight from young patients' perspective that what a child want for a child-friendly hospital and how architecture can contribute to it. Our findings suggest that for children, a child-friendly hospital environment means an environment in which they can continue their daily life without any major disruption. That means the environment should be supported both socially and spatially.

On a social level, it was observed that children want to stay in close with with their parents and their family. Children when not feeling well always want their parents nearby, they want to stay in contact with them. Apart from other family members, friends and peers, to maintain the homely environment siblings are very important too. but only if the hospital building can afford then only these interactions can take place. Sufficient space should be provided while designing it for social interactions, to give a pleasant environment to the children. Spatially it was found that children prefer to stay in a homelike atmosphere. However homelike atmosphere varies with every individual and is a very personal thing. In hospital design it can be can provided by giving children freedom to create their own space like arranging furnishings of their ward. In addition to this the hospital should radiate a welcoming atmosphere and not a gloomy and stressful environment. It is important to create a living room with cosy corners and seats in the children's ward. Children hospital deals with the children up to the age of 18, hence it is very important to turn its environment according to different age groups to make it a child friendly hospital. Generally hospitals focus primarily on young children and give less importance to the adolescents. As a result, adolescents may perceive the environment of the hospital childish. Therefore, it is important not to use too specific themes. Themes should be well thought before applying so that they may not seem childish. To create a homelike environment for children of different ages, abstract theme can be used which every child can interpret in their own way.

Our findings also complement the views in literature. The Ulrich's (1984) study concludes that it is important for patients rooms to have a view on green. The children who participated in our survey also appreciated a view of nature. Other outcomes from our suvery of children also compliment various literatures studied like being able to play and relax (Vollmer, 2012), having parents around as much as possible (De Wilde & Muylle, 2012; Vollmer, 2012), and to go outside (Wagenaar, 2006), can be analysed as important to every child. However, the psychology of every child is unique in itself, therefore it is important for designers to keep this aspect in mind while designing.

A limitation of our study is that it focused mainly on the role of architecture, children psychology, and their point of view. Apart from parents and doctors important role is played by the nursing staff, they are in contact with the children all the time and they only can ensure that a child feels like home and feels comfortable. Therefore it will be interesting to design hospital environment such that it can also have a positive effect on the staff. Children's hospital involves lot of emotions, therefore a pleasant environment can support a difficult period. A friendly and pleasant environment cannot itself heal the diseases but it can be an important consideration for making the user experience pleasant, increase life expectancies and ultimately may aid recovery.

## 6.5 CONCLUSION

As healthcare is one of the leading service industries today, with increasing number of children who require medical attention, it makes sense to examine ways to provide better facilities to this segment of the population. A child-friendly, pleasant and welcoming environment may not cure the illness of a child, but designing according to child psychology as its underlying component can work wonders for the healing process of patients. Being hospitalized brings many stressful and worrying thoughts in the psyche of the children, and this is also disruptive of their regular routines. The signal can be sent to the children that nothing big is going to happen to them and also nothing major changes are going to happen which can disturb their daily routine by providing hospitals with child friendly environment. Creating positive experiences in the hospital environment can transform an otherwise stressful and anxiety-ridden stay for children to an entertaining one. After conducting survey and literature study, it was found that Children's Hospitals are not designed according to child psychology and does not provide child friendly environment that cheer up and inspire children even in hospitals. With a view to address this gap in the healthcare industry, this project proposes a design for a children's hospital that will not only provide medical facilities but will also provide child friendly healing environment, ensuring positive recovery and quick healing.

# CHAPTER 7

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# CHAPTER 8

## THE SITE

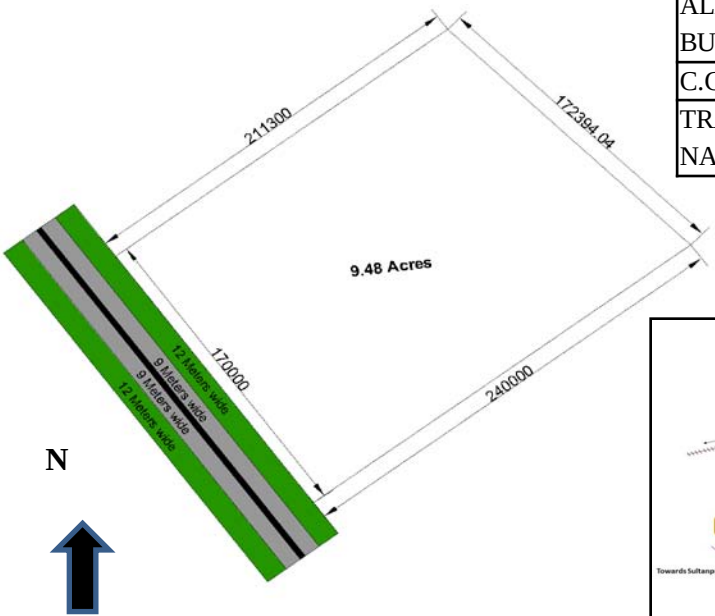
### 8.1 THE SITE

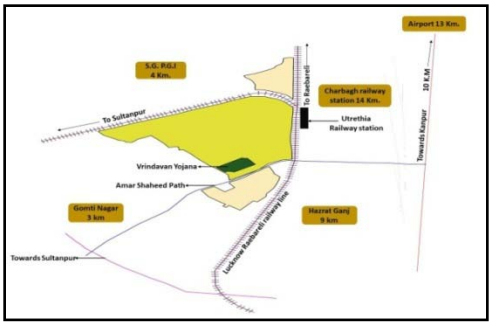
**Site area** : 9.48 Acre
**Coordinates:** 26˚ 46’ 41.052”n
80˚ 58’ 37.848”E
**Location:** sector 7c, Awadh ViharYojna, Lucknow (226030), Uttar Pradesh.
**Climate:** composite
**Status:** proposed / unbuilt.



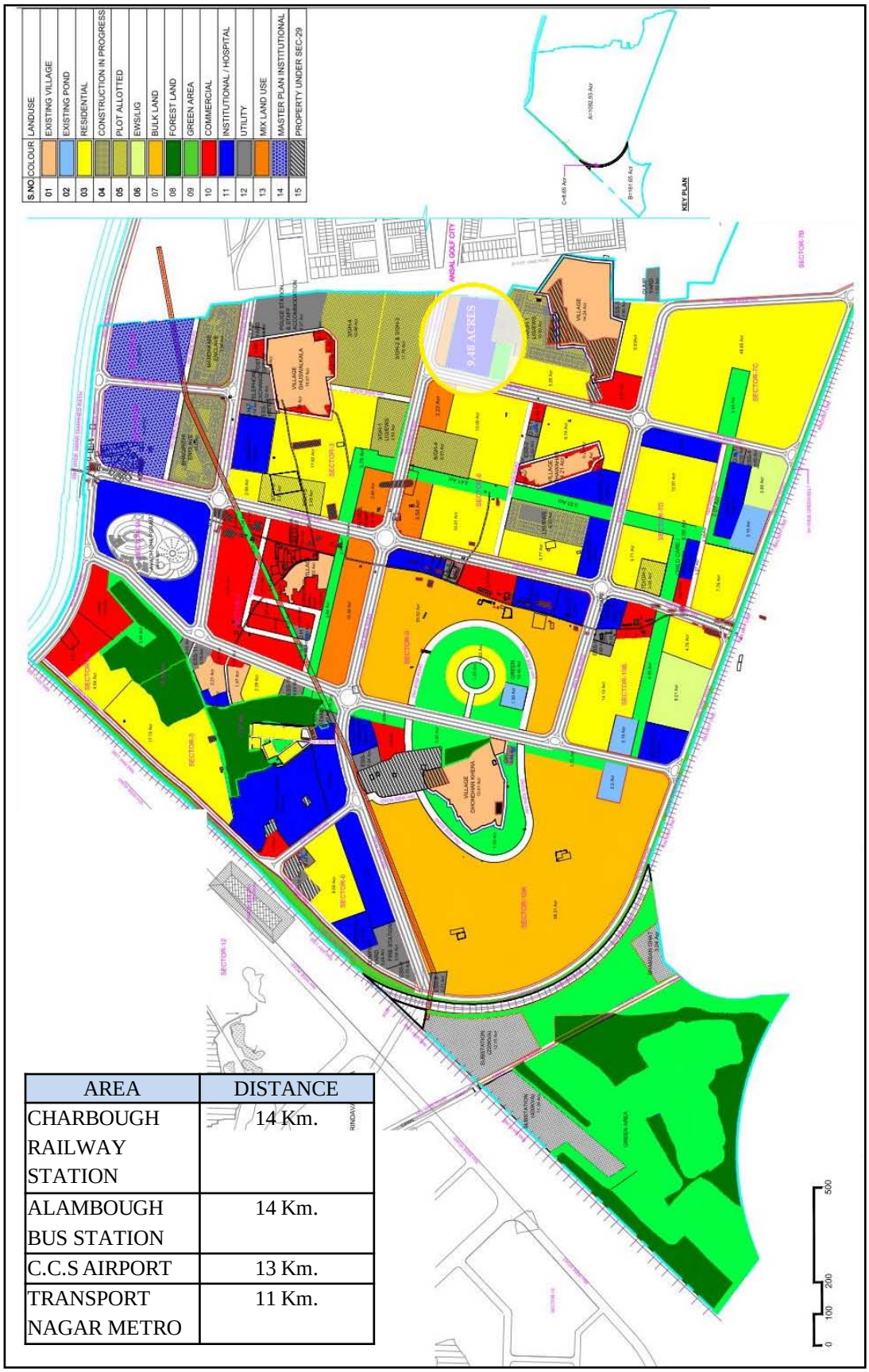
### APPROACH TO SITE

| AREA | DISTANCE |
|---|---|
| CHARBOUGH RAILWAY STATION | 14 Km. |
| ALAMBOUGH BUS STATION | 14 Km. |
| C.C.S AIRPORT | 13 Km. |
| TRANSPORT NAGAR METRO | 11 Km. |



### 8.1.1 Approach to Site




| AREA | DISTANCE |
|---|---|
| CHARBOUGH RAILWAY STATION | 14 Km. |
| ALAMBOUGH BUS STATION | 14 Km. |
| C.C.S AIRPORT | 13 Km. |
| TRANSPORT NAGAR METRO | 11 Km. |

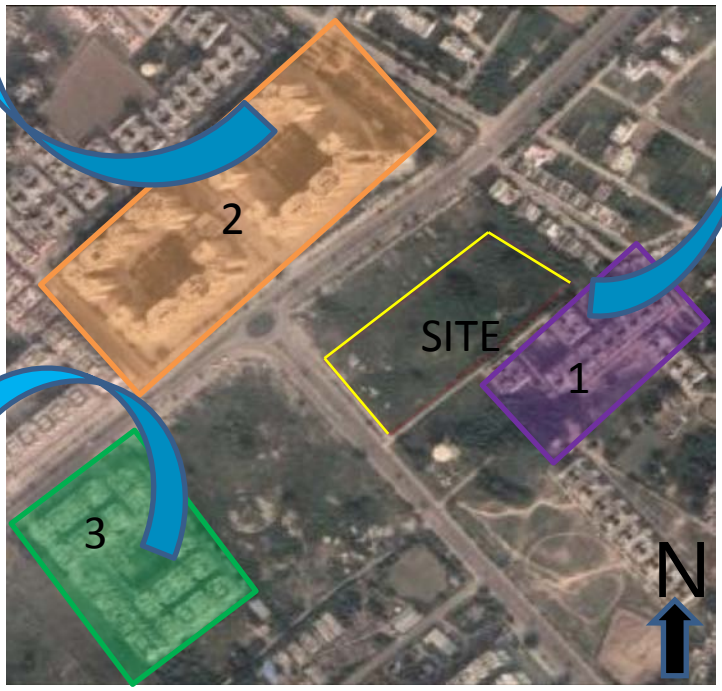
## 8.2 SURROUNDING

•the site is located near Pradhan Mantri Awas Yojana at the south direction of the site, at sector 7C Awadh Vihar Yojna.
•At the north eastern facing of the site is Alaknanda Enclave apartments.
•At the south western facing there is Gangotri Enclave appartements.

2 . Alakhnanda Enclave

1. Pradhan Mantri Awas Yojna

3. Gomti Enclave




Site

## 8.3 VEGETATION

The land is almost clear but self grown shrubs can be seen cultivated on their own at the site and mango ( mangifera indica) with 6m foliage can be seen grown at the northern corner of the site.


1. Magnifera Indica

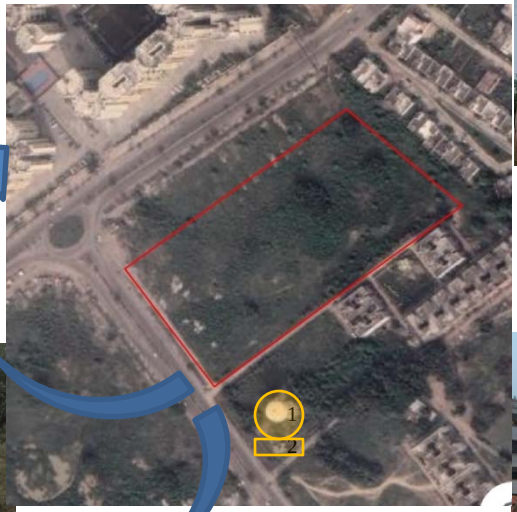
## 8.4 TOTAL ROAD WIDTH

Green Land: 12Mt. +12 Mt.= 24Mt.
Road: 9Mt.+9Mt.= 18 Mt.
Median: 3Mt.
Total: 45 Mt.

## 8.5 SERVICES

**Transformer**

**1. Water Tank**

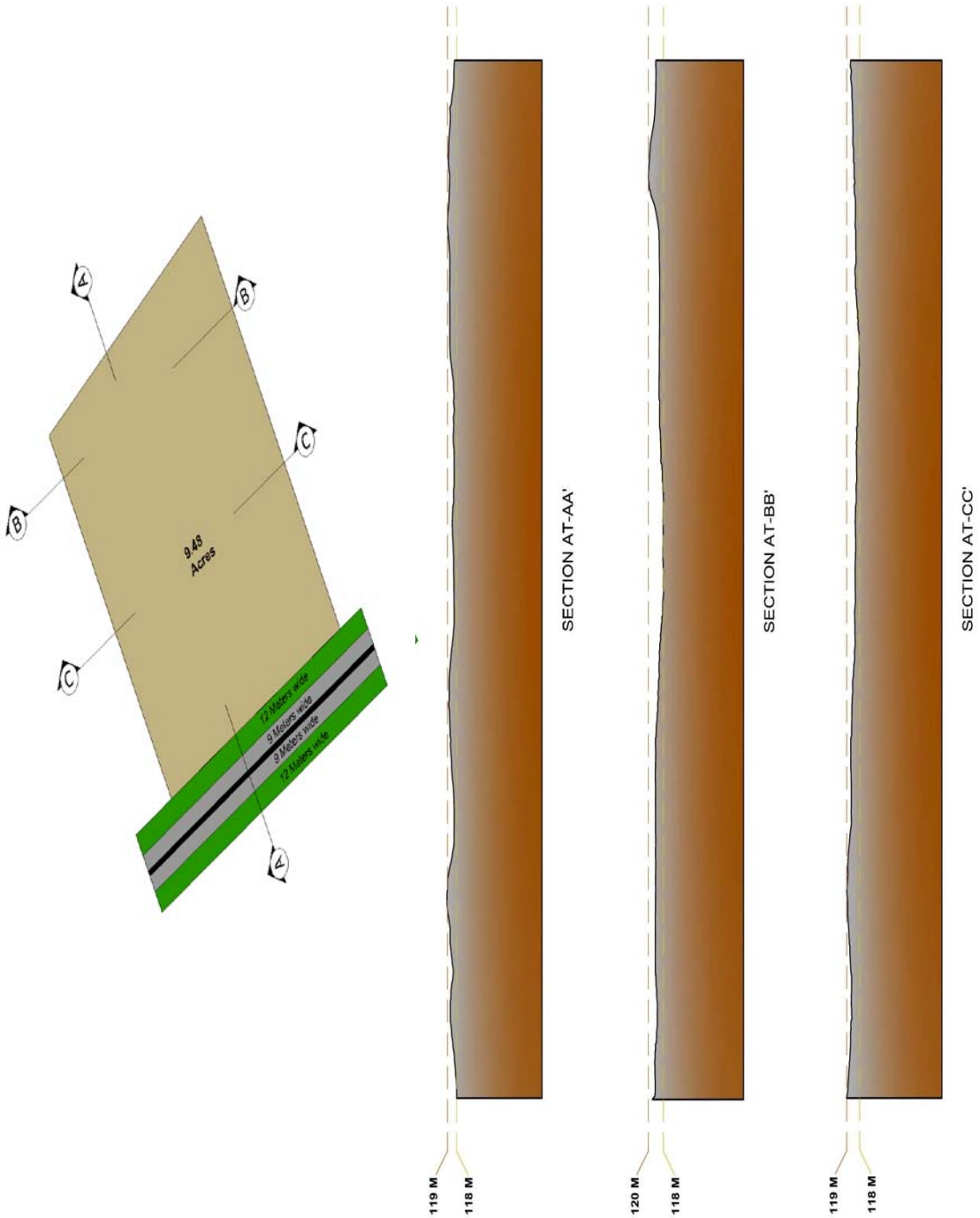



**Site**

**Sewer Line**

**2. Pump House**

## 8.6 TOPOGRAPHY

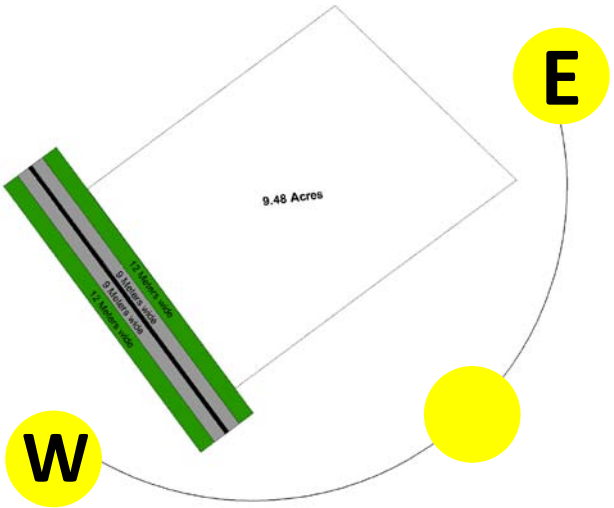


## 8.7 CLIMATE ANALYSIS

•Subtropical humid climate also known as composite climate.
•Hot & humid summer and mild cold winters.

### 8.7.1 Temperature

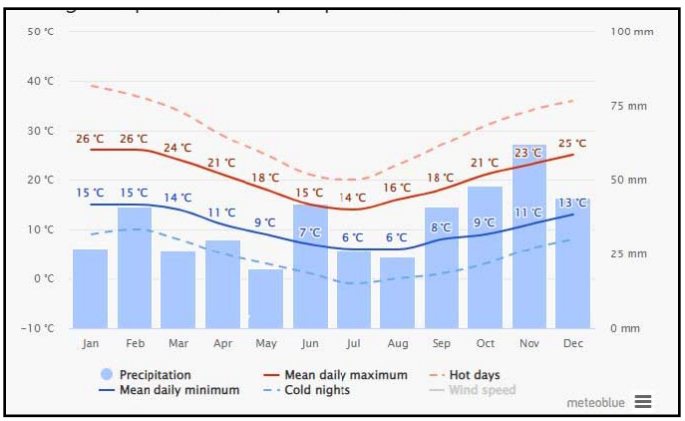
•May being the warmest month with a average temperature of 32.8˚.
•And January is the coldest with average temperature of 14.9˚.
•Average temperature along the year 25.1˚




Sun Movement Path

### 8.7.2 Precipitation

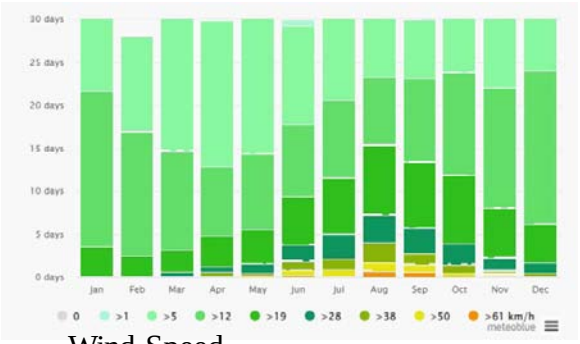
•Average precipitation 917.3 mm / 36.09 inches.
•Recorded lowest in November 6.4 mm / 0.1 inches.
•& most in July with an average recorded precipitation of 255.3mm / 10.05 inches.



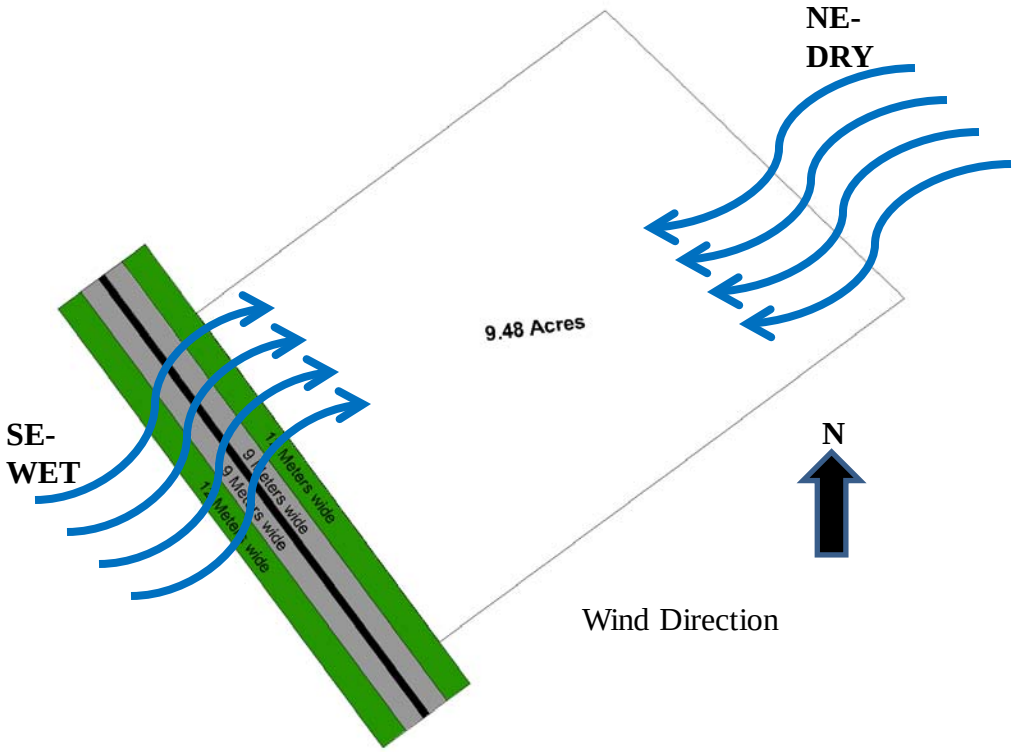

Average Temperature and Precipitation

### 8.7.3 Wind movement

Average hourly wind speed in Lucknow experiences significant seasonal variation over the course of the year. The windiest part of the year is from 21stJanuary to 15thSeptember, with average wind speed of 10. km. /hr. The calmer time of the year is from 15thSeptember to 21stJanuary. With an average hour wind speed of 7.0 Km./hr.




Wind Speed




### 8.7.4 Humidity

Average relative humidity is 55% .

### 8.7.5 Sky condition

•The clear part of the year in the Lucknow begins around 15 September and last for around 9.4 months and ends around 26 June. Thesky is clear and mostly clean, or partially cloudy 94% of the time, and overcast mostly cloudy 6% of the time.

•the cloudier part of the year begins around 26 June and last for 2.6 months, ending around in September. Is overcast or mostly cloudy 77% of the time and clear, mostly clear or partly cloudy23% of the time.

## 8.8 S.W.O.T. ANALYSIS

| STRENGTH | WEAKNESS | OPPORTUNITY | THREATS |
|---|---|---|---|
| ❑The site is located near to the Shaheed path which provides a great road connectivity of the site to other parts of the city.<br><br>❑The site will have direct approach to Palassio mall and Medanta hospital via Shaheed Path.<br><br>❑The site is well connected to airport, railway station, and bus stand.<br><br>❑There is a transformer adjacent to the site which assures the continues electricity supply.<br><br>❑There is also a water tank on the south west corner side of the site which will provide continues water supply without any hindrance. | ❑The site has only one side facing to the road ( south east) therefore we are limited to only one direction for providing entry and exit to the site.<br><br>❑The site is located adjacent to the residential area so there might be noises of many kinds happening at day time near the site which can cause discomfort to the patients.<br><br>❑There is no lodge or hotel near the site therefore it will over burden the facility to provide lodging space for the visitors.<br><br>❑Site is located right at the edge of the junction of two busy roads which will create noises at the day time and create huge discomfort for the patients . | ❑As the site is located near to the residential area the bed occupancy of the hospital will be high.<br><br>❑The facility will create new jobs for the unskilled labours from the nearby area.<br><br>❑The residents of the Pradhan Mantri Awas Yojna will also get benefited from the available facilities.<br><br>❑The facility will help grow local business. | ❑As hospitals discharge large amount of medical waste which is highly toxic in nature and the site is situated near to the residential area any exposure of the medical waste to the outer environment can harm the nearby residents.<br><br>❑As the site is located right at edge of the junction of two busy street there could be the situation of traffic congestion which can result in hindrance of the ambulance to the hospital. |

## 8.9 BYE LAWS

8.9.1 Set backs

6.6 **सैट–बैक** नर्सिंग होम पृथकीकृत (डिटेच्ड) भवन के रुप में होगा। भूखण्ड के क्षेत्रफल तथा भवन की ऊँचाई के आधार पर सेट–बैक निम्नानुसार होंगे :–

| **भवन की ऊँचाई** (मीटर) | **भूखण्ड का क्षेत्रफल** (वर्ग मीटर) | **सेट बैक** (मीटर) | | | |
|---|---|---|---|---|---|
| | | **अग्र** | **पृष्ठ** | **पार्श्व–1** | **पार्श्व–2** |
| 12.5 तक | 300–500 तक | 4.5 | 4.5 | 3.0 | 1.8 |
| | 501–1000 तक | 9.0 | 4.5 | 3.0 | 3.0 |
| | 1000 से अधिक | 9.0 | 4.5 | 3.0 | 3.0 |
| 12.5 से 15 तक | 500 से अधिक | 9.0 | 5.0 | 5.0 | 5.0 |

8.9.2 Ground coverage and F.A.R.

| **चिकित्सा** | | |
|---|---|---|
| (क) निर्मित / विकसित क्षेत्र | | |
| • क्लीनिक / डिस्पेन्सरी | 35 | 1.50 |
| • नर्सिंग होम 50 शैय्याओं तक | 35 | 1.50 |
| • अस्पताल 50–100 शैय्याओं तक | 35 | 1.50 |
| • अस्पताल 100 शैय्याओं से अधिक | 35 | 1.50 |

8.9.3 Parking

| | |
|---|---|
| (ख) अस्पताल, नर्सिंग होम | प्रति 100 व.मी. तल क्षेत्रफल पर 1.5 |

**<u>BYE LAWS as per Lucknow Development Authority for the project</u>**

**SET BACK**
FRONT – 9.0M
REAR – 4.5M
SIDE – 6.0M

**GROUND COVERAGE** – 35%
**F.A.R.** – 1.50

**PARKING**
1.5 ECS PER 100 SQ.M.

## 8.10 REQUIREMENTS

### GROUPING OF GENERAL HOSPITALS

For the purpose of this standard the hospitals have been divided into the following five categories:

- Category A 25 to 50 Beds
- Category B 51 to 100 Beds
- Category C 101 to 300 Beds
- Category D 301 to 500 Beds
- Category E 501 to 750 Beds

Various departments which administrative and hospital services buildings should have for comfort and well being of patients shall be as follows:

1. **SECTIONS OF ADMINISTRATIVE AND HOSPITAL SERVICES BUILDINGS**

**a)** ***Administrative Department:***

1) General, and
2) Medical records.

**b)** ***Hospital Services Department:***

1) Central Sterilization and Supply Department,`
2) Dietary,
3) Laundry,
4) Hospital stores,
5) Workshops,
6) Transport services,
7) Community services, and
8) Mortuary.

2. **SECTIONS OF A MEDICAL SERVICES BUILDING**

***a) Out-Patients Department:***

1) General facilities;
2) Clinics for various medical disciplines;
3) Supporting facilities like laboratory, injection room, etc;
4) Pharmacy; and
5) Blood bank.

***b)Emergency and Casualty Department***

***c) Digonostic and Trealment Departments:***

1) Pathology,
2) Radiology,
3) Physiotherapy, and
4) Operation theatre.

***d) In-Patient or Nursing Units:***

1) General wards,
2) Ward for particular specialities, and
3) Intensive care unit.

| ZONE SERVICE | FUNCTION | MODULE | AREA (SQ.M.) |
|---|---|---|---|
| **Entrance Area** | | | 420 |
| Main Entrance | | 25 | 175 |
| | Entrance lobby | | 49 |
| | — Trolley park | 1.5 | |
| | — General waiting | 3.5 | |
| | - Public utilities | 2.0 | |
| | Reception | | 63 |
| | — Enquiry counter | 1.5 | |
| | — Registration counter | 1.5 | |
| | — Queuing tracks | 2.0 | |
| | — Records | 2.0 | |
| | — Stafl'accommodation | 2.0 | |
| | Dispensary | | 63 |
| | — Issue counter | 2.0 | |
| | — Queuing track | 2.0 | |
| | — Drugs store | 2.0 | |
| | — Staff accommodation | 3.0 | |
| OPD/Emergency Entrance | | 25 | 175 |
| | Entrance Lobby | | 49 |
| | — Trolley park | 1,5 | |
| | —General waiting | 3.5 | |
| | — Public utilities | 2 | |
| | Reception | | 70 |
| | — Enquiry counter | 1.5 | |
| | — Admission/discharge | 1.5 | |
| | — Cash counter | 1.5 | |
| | — Queuing track | 2 | |
| | — Staff accommodation | 2 | |
| | Arcade | | 35 |
| | — Chemist " | 2 | |
| | — Gift, book shop | 1.5 | |
| | — Snack counter | 1.5 | |
| | Control Room | | 21 |
| | — Security/fire | 1.5 | |
| | — Ambulance station | 10 | |
| Service/Staff Entrance | | | 70 |
| | Landing Bay | | 42 |
| | — Trolley park | 2 | |
| | — Temporary storage | 2 | |
| | — Central receiptiinspection | 2 | |
| | Staff Utilities | | 28 |
| | — Lockers | 1.5 | |
| | — Change rooms | 1.5 | |
| | — Time keeping | 1 | |
| | | | |
| **Ambulatory Care Area Clinics (Required)** | | | 931 |

| ZONE SERVICE | FUNCTION | MODULE | AREA (SQ.M.) |
|---|---|---|---|
| | General Clinics | | 56 |
| | —Exam/Consultation (2) | 4 | |
| | — Sub-waiting | 4 | |
| | Medical | | 56 |
| | —Exam/Consultation (2) | 4 | |
| | — Sub-waiting | 4 | |
| | Surgical | | 56 |
| | —Consultation (2) | 4 | |
| | — Sub-waiting | 2 | |
| | Ophthalmic | | 112 |
| | —Exam/Consultation (2) | 4 | |
| | — Refraction | 2 | |
| | — Osteopathy | 2 | |
| | — Treatment | 2 | |
| | — Minor surgery/Treatment | 3 | |
| | — Sub-waiting | 3 | |
| | —Exam/Treatment (2) | 4 | |
| | — Audiometry | 2 | |
| | — Speech therapy | 2 | |
| | — Sub-waiting | 3 | |
| | Dental | | 63 |
| | —Exam/Treatment (1) | 3 | |
| | — Dental laboratory | 2 | |
| | — Dental X-ray | 1 | |
| | — Sub-waiting | 3 | |
| | OBS and Gynae | | 70 |
| | —Exam/Consultation (2) | 4 | |
| | — Toilet/Change | 2 | |
| | — Sub-waiting | 4 | |
| | Pediatric | | 56 |
| | —Exam/Consultation (2) | 2 | |
| | — Counseling | 2 | |
| | — Treatment (Immunization) | 2 | |
| | — Sub-waiting | 2 | |
| | Orthopedics | | 56 |
| | —Exam/Consultation | 2 | |
| | — Plaster room | 2 | |
| | — Splint store | 2 | |
| | — Sub-waiting | 2 | |
| Clinics (Optional) | | 25 | 178 |
| | Dermatology and Veneriology | | 63 |
| | —Exam/Consultation | 2 | |
| | — Skin lab | 2 | |
| | — Treatment | 2 | |
| | — Sub-waiting | 3 | |
| | Psychiatry | | 66.5 |

| ZONE SERVICE | FUNCTION | MODULE | AREA (SQ.M.) |
|---|---|---|---|
| | —Exam/Consultation | 2 | |
| | — Counseling | 2 | |
| | — ECT and recovery | 2.5 | |
| | — Sub-waiting | 3 | |
| | Neonatology | | 49 |
| | —Exam/Consultation | 2 | |
| | — Counseling | 2 | |
| | — Sub-waiting | 3 | |
| | Nursing Services | | 21 |
| | Nursing station | | 35 |
| | — Nurse’s desk | 2 | |
| | — Clean utility | 1.5 | |
| | — Dirty utility | 1.5 | |
| | Diagnostic | | 63 |
| | — Sample collection | 1.5 | |
| | — Side laboratory | 2.5 | |
| | — Electrocardiography | 2 | |
| | — Sub-waiting | 3 | |
| | | | |
| **Diagnostic Services** | | | 595 |
| Imaging | | 50 | 350 |
| | Reception | | |
| | — Enquiry/Registration | 2 | |
| | — Queuing track | 2 | |
| | — Records | 2 | |
| | — Sub-waiting | 3 | |
| | General X-ray | | 63 |
| | — Radiography room | 4 | |
| | — Control room | 1 | |
| | — Change room | 1 | |
| | — Sub-waiting | 3 | |
| | Special X-ray | | 87.5 |
| | — Radiography room | 5 | |
| | — Control room | 1 | |
| | — Change room | 1 | |
| | — Toilet | 1 | |
| | —Barium preparation | 1.5 | |
| | — Sub-waiting | 3 | |
| | Ultrasound | | 35 |
| | — Ultrasound | 2 | |
| | — Change room | 1 | |
| | — Sub-waiting | 2 | |
| | support | | 52 |
| | — Dark rooms | 2 | |
| | —Film/Chemical store | 1.5 | |
| | — Reporting | 2.5 | |
| | — Archive/Record | 2 | |

| ZONE SERVICE | FUNCTION | MODULE | AREA (SQ.M.) |
|---|---|---|---|
| | staff | | 49 |
| | – Consultant (1) | 2 | |
| | — Residents | 2 | |
| | — Technicians | 2 | |
| | — Staff toilets | 1 | |
| Clinical Laboratories | | | 175 |
| | Reception | | 49 |
| | — Enquiry/Record | 2 | |
| | — Sample receipt and preparation | 2 | |
| | — Sub-waiting | 2 | |
| | — Toilets | 1 | |
| | Laboratories | | 56 |
| | — Emergency | 2 | |
| | — Immnopathology | 2 | |
| | — Histology | 2 | |
| | — cytology | 2 | |
| | Support | | 35 |
| | — Washing and disinfection | 2 | |
| | — Media preparation | 1.5 | |
| | — Chemical/Glassware store | 1.5 | |
| | staff | | 35 |
| | — Pathologist (1) | 2 | |
| | — Technicians | 2 | |
| | — Staff toilets | 1 | |
| | | | |
| **Blood Bank** | | 10 | 70 |
| | — Reception/Waiting | 2 | |
| | — Bleeding | 2 | |
| | — Refreshment/Donors rest room | 2 | |
| | — Blood lab/Storage | 2 | |
| | — Doctors rest room | | |
| | | | |
| **Intermediate Care Area** | | | 1575 |
| General Wards (2x 30 Beds) | | 120 | 840 |
| | Nursing station | | 168 |
| | — Nurses desk (2) | 3 | |
| | — Clean utility (2) | 3 | |
| | — Pantry (2) | 3 | |
| | — Store (2) | 3 | |
| | — Treatment room (2) | 4 | |
| | — Dirty utility/Sluice room (2) | 4 | |
| | — Janitor (2) | 1 | |
| | — Trolley park (2) | 3 | |
| | Patient beds | | 476 |

| ZONE SERVICE | FUNCTION | MODULE | AREA (SQ.M.) |
|---|---|---|---|
| | — General beds 2 x 24 | 48 | |
| | — Isolation beds 2 x 2 | 8 | |
| | — Progressive beds 2 x 4 | 12 | |
| | Patient conveniences (2) | 9 | 63 |
| | Day space (2) | 9 | 63 |
| | Staff accommodation | | 70 |
| | — Nurse duty (2) | 5 | |
| | — Doctors duty (2) | 5 | |
| Maternity Ward 15 Beds | | | 84 |
| | Nursing station | | |
| | — Nurses desk | 1.5 | |
| | — Clean utility | 1.5 | |
| | — Pantry | 1.5 | |
| | — Treatment room | 2 | |
| | — Dirty utility/Sluice room | 2 | |
| | — Janitor | 0.5 | |
| | — Trolley park | 1.5 | |
| | Patient beds | | 143 |
| | — Single beds]) | 12.5 | |
| | — Double beds*) | 8 | |
| | Visitor's bay | 2.5 | 17.5 |
| | Staff accommodation | | 35 |
| | — Nurses duty | 2.5 | |
| | — Doctors duty | 2.5 | |
| | Nursing station | 40 | 280 |
| | — Nurses desk | | 84 |
| | — Clean utility | 1.5 | |
| | — Pantry | 1.5 | |
| | — Store | 1.5 | |
| | — Treatment | 2 | |
| | — Dirty utility | 2 | |
| | — Janitor | 0.5 | |
| | — Trolley park | 1.5 | |
| | Maternity beds | | 133 |
| | — Pre natal beds 5 | 6 | |
| | — Toxemia beds 2 | 3 | |
| | — Delivery beds 4 | 4 | |
| | — Post natal beds with baby bassinets 4 | 6 | |
| | Patient conveniences | 2 | 14 |
| | Day space | 2 | 14 |
| | Staff accommodation | | 35 |
| | — Nurses duty | 2.5 | |
| | — Doctors duty | 2.5 | |
| | | | |
| **Pediatric Ward 6 BEDS** | | 25 | 175 |
| | Nursing station | | 77 |
| | — Nurses desk | 1 | |

| ZONE SERVICE | FUNCTION | MODULE | AREA (SQ.M.) |
|---|---|---|---|
| | — Clean utility including | 1.5 | |
| | formula room | | |
| | — Pantry | 1.5 | |
| | — Store | 1.5 | |
| | — Treatment room including phototherapy | 2 | |
| | — Dirty utility/Sluice | 1.5 | |
| | — Janitor | 0.5 | |
| | — Trolley park | 1.5 | |
| | Patient beds | | 49 |
| | — Pediatric beds 4 | 5 | |
| | — Premature nursery 1 | 1 | |
| | — Septic nursery 1 | 1 | |
| | — Patient conveniences | 1.5 | 10.5 |
| | — Day space | 1.5 | 10.5 |
| | Staff accommodation | | 28 |
| | — Nurses duty 2.0 | 2 | |
| | — Doctors duty 2.0 | 2 | |
| | | | |
| **Intensive Care Area** | | | 196 |
| Patient Care Area | Patient Care Area | 28 | 196 |
| | Nursing station | | |
| | — Central console | 3 | |
| | — Clean utility | 1.5 | |
| | — Pantry | 1.5 | |
| | — Store | 1.5 | |
| | — Equipment park | 1.5 | |
| | — Dirty utility | 1.5 | |
| | — Janitor | 0.5 | |
| | — Trolley park | 1.5 | |
| | Patient beds | | 66.5 |
| | Intensive care beds 4 | 6 | |
| | — Patient conveniences | 1.5 | |
| | — Relatives bay | 2 | |
| | Staff accommodation | | 42 |
| | — Nurses duty | 2.5 | |
| | — Doctors duty | 2.5 | |
| | — Staff change | 1 | |
| | | | |
| **Critical Care Area** | | | 469 |
| Emergency Service | | 67 | 469 |
| | Nursing station | | 150 |
| | — Nurses desk | 1.5 | |
| | — Clean utility | 1,5 | |
| | —ECG room | 2 | |
| | — Pantry | 1.5 | |
| | — Reception | 1 | |
| | — Medico-legal specimen | 1.5 | |

| ZONE SERVICE | FUNCTION | MODULE | AREA (SQ.M.) |
|---|---|---|---|
| | and record | | |
| | — Emergency lab | 3 | |
| | — Mobile X-ray | 3 | |
| | — Dirty utility | 1.5 | |
| | — Janitor | 0.5 | |
| | — Trolley park | 1.5 | |
| | — Stores | 2 | |
| | Exam/Resuscitation 6 beds | | 147 |
| | — Waiting | 3 | |
| | — Social worker | 1.5 | |
| | — Police/Legal recording | 1.5 | |
| | — Drug dispensing | 2 | |
| | — Examination cubicles | 3 | |
| | — Emergency beds 3 | 4.5 | |
| | — Observation beds 3 | 4.5 | |
| | — Patient conveniences | 1 | |
| | Operating suite | | 119 |
| | — Emergency OT | 4.5 | |
| | — Scrub/Gowning | 1.5 | |
| | — Instrument sterilization | 1.5 | |
| | — Dirty utility | 1.5 | |
| | — Anesthesia | 2 | |
| | — Plaster room | 3 | |
| | — Treatment room | 3 | |
| | Staff accommodation | | 52.5 |
| | — Nurses duty | 2.5 | |
| | — Doctors duty | 2.5 | |
| | — Ambulance driver/nursing | 2.5 | |
| | assistant) | | |
| | | | |
| **Therapeutic Services** | | | 875 |
| Operation Theatre Suite | | 63 | 441 |
| | Protective zone | | 161 |
| | Staff changing (3 units) | | |
| | — Lockers | 2 | |
| | — Change rooms/Staff resting | 3.5 | |
| | — Rest room | 2 | |
| | — Pantry | 1.5 | |
| | — Staff conveniences | 1.5 | |
| | Staff accommodation | | |
| | — Nurses' duty | 2.5 | |
| | — Anesthetist's duty | 2.5 | |
| | Theatre supply (stores) | 3 | |
| | — Pre-anaesthesia exam | 2 | |
| | — Waiting | 2.5 | |
| | Clean zone | | 154 |
| | Nursing station | | |

| ZONE SERVICE | FUNCTION | MODULE | AREA (SQ.M.) |
|---|---|---|---|
| | — Nurses desk | 1.5 | |
| | — Clean utility | 1.5 | |
| | — Dirty utility | 1.5 | |
| | — Janitor | 0.5 | |
| | — Trolley park | 1.5 | |
| | Patient beds | | |
| | —Pre-anaesthesia 2 | 3 | |
| | —Recovery 2 | 3 | |
| | — Patient conveniences | 1.5 | |
| | — Theatre pack prep | 2 | |
| | — Frozen section | 1 | |
| | — Plaster room | 2.5 | |
| | — X-ray with darkroom | 2.5 | |
| | Sterile zone | | 112 |
| | — Operating theatres(2) | 9 | |
| | — Scrub/Gowning | 2 | |
| | — Instrument trolley layup | 2 | |
| | — Anesthesia | 3 | |
| | Disposal zone | | 14 |
| | — Dirty utility | 2 | |
| Physiotherapy | | 40 | 280 |
| | Therapies | | 84 |
| | — Reception/Record | 2 | |
| | — Electrotherapy | 3 | |
| | — Thermotherapy | 1.5 | |
| | — Massage therapy | 1.5 | |
| | — Gymnasium | 5 | |
| | — Traction | 2 | |
| | — Store | 2 | |
| | Staff accommodation and patient waiting | | 35 |
| | — Physiotherapist with attached toilet | 2.5 | |
| | — Sub-waiting with toilet | 2.5 | |
| | | | |
| **Hospital Services** | | | 700 |
| Hospital Kitchen | | 22 | 154 |
| | Entrance | | |
| | — Lockers | 0.5 | |
| | — Staff change | 1 | |
| | Bulk storage | 1.5 | 10.5 |
| | Day store | 1 | 7 |
| | Pre-preparation | 1 | 7 |
| | Preparation | 2 | 14 |
| | Cooking Baking | 4.5 | 31 |
| | Loading/Distribution | 1.5 | 10.5 |
| | Washing | | 17.5 |
| | — Trolley wash | 1.5 | |

| ZONE SERVICE | FUNCTION | MODULE | AREA (SQ.M.) |
|---|---|---|---|
| | — Utensil and pot wash | 1 | |
| | Utensil storage | 1.5 | 10.5 |
| | Trolley park | 1.5 | 10.5 |
| | Staff accommodation | | 17.5 |
| | —Dietitian | 1.5 | |
| | — Dietetics staff | 1 | |
| | Staff conveniences | 1 | 7 |
| Central Sterile Supply | | 20 | 140 |
| | Entrance | | 10.5 |
| | — Lockers | 0.5 | |
| | — Staff change | 1 | |
| | Dirty receipt | 1 | 7 |
| | Washing/Disinfection | 2.5 | 17.5 |
| | Assembly | 1.5 | 10.5 |
| | Sterilization | 2 | 14 |
| | Sterile storage | 3 | 21 |
| | Delivery/Distribution | 1.5 | 10.5 |
| | Trolley wash | 1 | 7 |
| | Trolley park | 1.5 | 10.5 |
| | Bulk store | 1.5 | 10.5 |
| | Staff accommodation | | 17.5 |
| | — CSS supervisor | 1.5 | |
| | — Technical staff | 1 | |
| | Staff conveniences | 0.5 | 3.5 |
| Hospital Laundry | | 22 | 154 |
| | Entrance | | 10.5 |
| | — Lockers | 0.5 | |
| | — Staff change | 1 | |
| | Dirty receipt | 1 | 7 |
| | Sorting/Weighing | 1.5 | 10.5 |
| | Sluicing | 1 | 7 |
| | Washing | 2.5 | 17.5 |
| | Hydro-extraction | 2 | 14 |
| | Tumble drying | 1.5 | 10.5 |
| | Flat work ironing | 1.5 | 10.5 |
| | Hand pressing | 1 | 7 |
| | Clean storage | 1 | 7 |
| | Mending | 1 | 10.5 |
| | Delivery/Distribution | 1.5 | 7 |
| | Trolley wash | 1 | 7 |
| | Trolley park | 1 | 17.5 |
| | Staff accommodation | | |
| | — Laundry supervisor | 1.5 | |
| | — Laundry staff | 1 | |
| | Staff conveniences | 0.5 | 3.5 |
| Medical and General Stores | | 26 | 182 |
| | Surgical and dressing | 4.5 | 31.5 |

| ZONE SERVICE | FUNCTION | MODULE | AREA (SQ.M.) |
|---|---|---|---|
| | Linen and livery | 2 | 14 |
| | Stationery and printing | 2 | 14 |
| | Medical & General Stores | | |
| | Chemical and glassware | 2 | 14 |
| | Mortuary | | |
| | Sanitation and mist | 2 | 14 |
| | Furniture | 4.5 | 31.5 |
| | Issue | 2 | 14 |
| | Trolley park | 1.5 | 10.5 |
| | Awaiting condemnation | 1.5 | 10.5 |
| | Staff accommodation | | 28 |
| | — Stores officer | 1.5 | |
| | — Secretarial staff | 1 | |
| | — Store keepers | 1.5 | |
| Mortuary | | 10 | 70 |
| | Autopsy | 3 | 21 |
| | Body store | 1.5 | 10.5 |
| | Body wash | 1.5 | 10.5 |
| | Staff accommodation | 1.5 | 10.5 |
| | Public utilities | 0.5 | 3.5 |
| | Sub-waiting | 2 | 14 |
| | | | |
| **Administrative/Ancillary Services** | | | 448 |
| Hospital Administration | | 9 | 63 |
| | Medical superintendent | 3 | 21 |
| | Secretarial staff | 3 | 21 |
| | Sub-waiting | 3 | 21 |
| Nursing Administration | | 7 | 49 |
| | Matron | 2 | 14 |
| | Secretarial staff | 3 | 21 |
| | Sub-waiting | 2 | 14 |
| General Administration | | 12 | 84 |
| | Personnel office | 2 | 14 |
| | Accounts office | 2.5 | 17.5 |
| | Purchase office | 2.5 | 17.5 |
| | Secretarial staff | 3 | 21 |
| | Sub-waiting | 2 | 14 |
| Hospital Information | | 4.5 | 31.5 |
| | Supervisor | 1.5 | 10.5 |
| | Computer room | 3 | 21 |
| Security/Fire | | 2.5 | 17.5 |
| | Supervisor | 1.5 | 10.5 |
| | Secretarial staff | 1 | 7 |
| Mobile Transport | | 2.5 | 17.5 |
| | Supervisor | 1.5 | 10.5 |
| | Secretarial staff | 1 | 7 |
| House Keeping | | 2.5 | 17.5 |

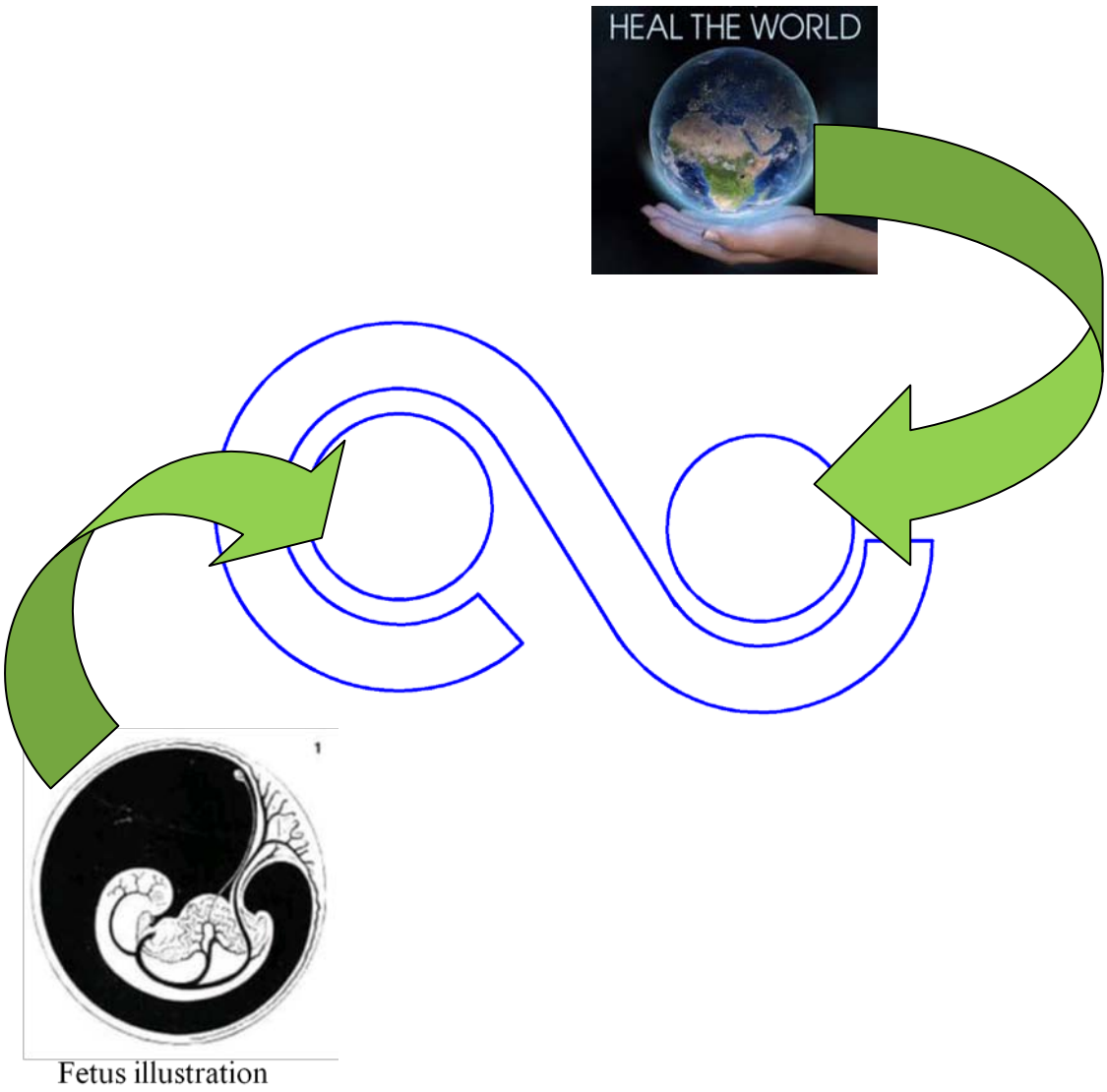
| ZONE SERVICE | FUNCTION | MODULE | AREA (SQ.M.) |
|---|---|---|---|
| | Supervisor | 1.5 | 10.5 |
| | Secretarial staff | 1 | 7 |
| Library/Conference | | 14 | 98 |
| | Supervisor | 1.5 | 10.5 |
| | Secretarial staff | 1.5 | 10.5 |
| | Index/Issue counter | 2 | 14 |
| | Storage racks | 2 | 14 |
| | Reading bays | 1.5 | 10.5 |
| | Conference room | 4 | 28 |
| | Reprographics | 1.5 | 10.5 |
| Medical Records | | 10 | 70 |
| | Receipt | 1 | 7 |
| | Compilation desk | 1.5 | 10.5 |
| | Indexing/Coding | 1 | 7 |
| | Statistical analysis | 1.5 | 10.5 |
| | Issue | 1 | 7 |
| | Stationery store | 1 | 7 |
| | Staff accommodation | | 17.5 |
| | — Medical records officer | 1.5 | |
| | — Secretarial staff | 1 | |
| | Staff conveniences | 0.5 | 3 |

# CHAPTER 9

# DESIGN

## 9.1 CONCEPT

Children's "survival, protection, growth and development in good health and with proper nutrition is the essential foundation of human development.“ We can get children's minds to open so they can learn to see themselves, understand themselves, their feelings, see children, and learn to have compassion for each other, despite our differences, love each other, be kind to each other, while learning things together. And when these children grow up and become adults, they'll be more inclined to love each other, help each other, and heal together. So that's the way to **HEAL THE WORLD**, through children.




Fetus illustration

- Provide the Child friendly environment is the main concept hence taken the shape of the fetus as the children feel most save when they are with their mother.
- The S-shape formed represents the flow of life starting from infant to childhood to an adult.
- Round shape make easier to access resources and make movement of staff and patients more efficient.
- The curvilinear volume is as long as possible to create many social places. Many exterior courtyards are created and allowing the existing tree on the site to remain.
- Design inspired by the rich garden setting, design elements of plant life, organic forms, exterior views and natural lighting concepts to enhance senses and allow both children and adults to rediscover the wonders of nature.
- S- shaped, snaking around and embracing .A full length corridor runs the length of the building . There will always be a combination of sun and shade due to the shape of the curve. This creates temperature changes which in turn generate air movement and a microclimate.
- This shape could easily be used to extend the hospital campus further if needed or if need to combine rooms it can be done.

12 M WIDE ROAD

MOUND

12 M WIDE ROAD

12 M WIDE ROAD

PARKING

PARKING

12 M WIDE ROAD

45 M WIDE ROAD

N

| | | | | |
|---|---|---|---|---|
| **Project Title :**<br>CREATING A CHILD FRIENDLY ENVIRONMENT FOR CHILDREN'S HEALTH AND WELLNESS ( 100 BEDDED CHILDREN'S HOSPITAL) | **Drg Title :**<br>SITE PLAN | **SUBMITTED BY :**<br>VARSHA YADAV<br>M.ARCH. 3RD YEAR 6TH SEMESTER<br>ENROLL. NO. 1200109013 | **BBD UNIVERSITY**<br>SCHOOL OF ARCHITECTURE &<br>PLANNING | **GUIDED BY :**<br>DR. PROF. MOHIT KUMAR AGARWAL<br>AR. SATYAM SRIVASTAVA |

# AREA STATEMENT

| | | |
|---|---|---|
| PLOT AREA | = | 38364.20 SQ.M. |
| PERMISSIBLE GROUND COVERAGE = 35% | = | 13427.47 SQ.M. |
| PERMISSIBLE F.A.R. = 1.5 | = | 20141.20 SQ.M. |
| COVD. AREA ON GROUND FLOOR | = | 5626.16 SQ.M. |
| COVD. AREA ON FIRST FLOOR | = | 5379.54 SQ.M. |
| COVD. AREA ON SECOND FLOOR | = | 5566.97 SQ.M. |
| COVD. AREA ON THIRD FLOOR | = | 5091.43 SQ.M. |
| COVD. AREA ON FOURTH FLOOR | = | 5116.92 SQ.M. |
| COVD. AREA ON FIFTH FLOOR | = | 4351.11 SQ.M. |
| COVD. AREA ON SIXTH FLOOR | = | 1970.27 SQ.M. |
| TOTAL COVERED AREA | = | 33102.40 SQ.M. |
| COVD. AREA OF UPPER BASEMENT(PARKING) | = | 4368.17 SQ.M. |
| COVD. AREA OF LOWER BASEMENT(PARKING) | = | 4176.17 SQ.M. |
| COVD. AREA OF BASEMENT | = | 504.24 SQ.M. |
| TOTAL COVERED AREA OF BASEMENT | = | 9048.58 SQ.M. |
| ACHIEVED GROUND COVERAGE | = | 14.76% |
| ACHIEVED F.A.R. | = | 0.86 |
| PARKING | | |
| E.C.S. | | 1.5/100SQ.M. |
| NO. OF PARKING REQUIRED | | (33102.40X1.5)/100= 496.54 |
| | | 496.54 SAY 497 CARS |
| NO. OF PARKING PROVIDED | | 500 CARS |

EMERGENCY OT

EMERGENCY

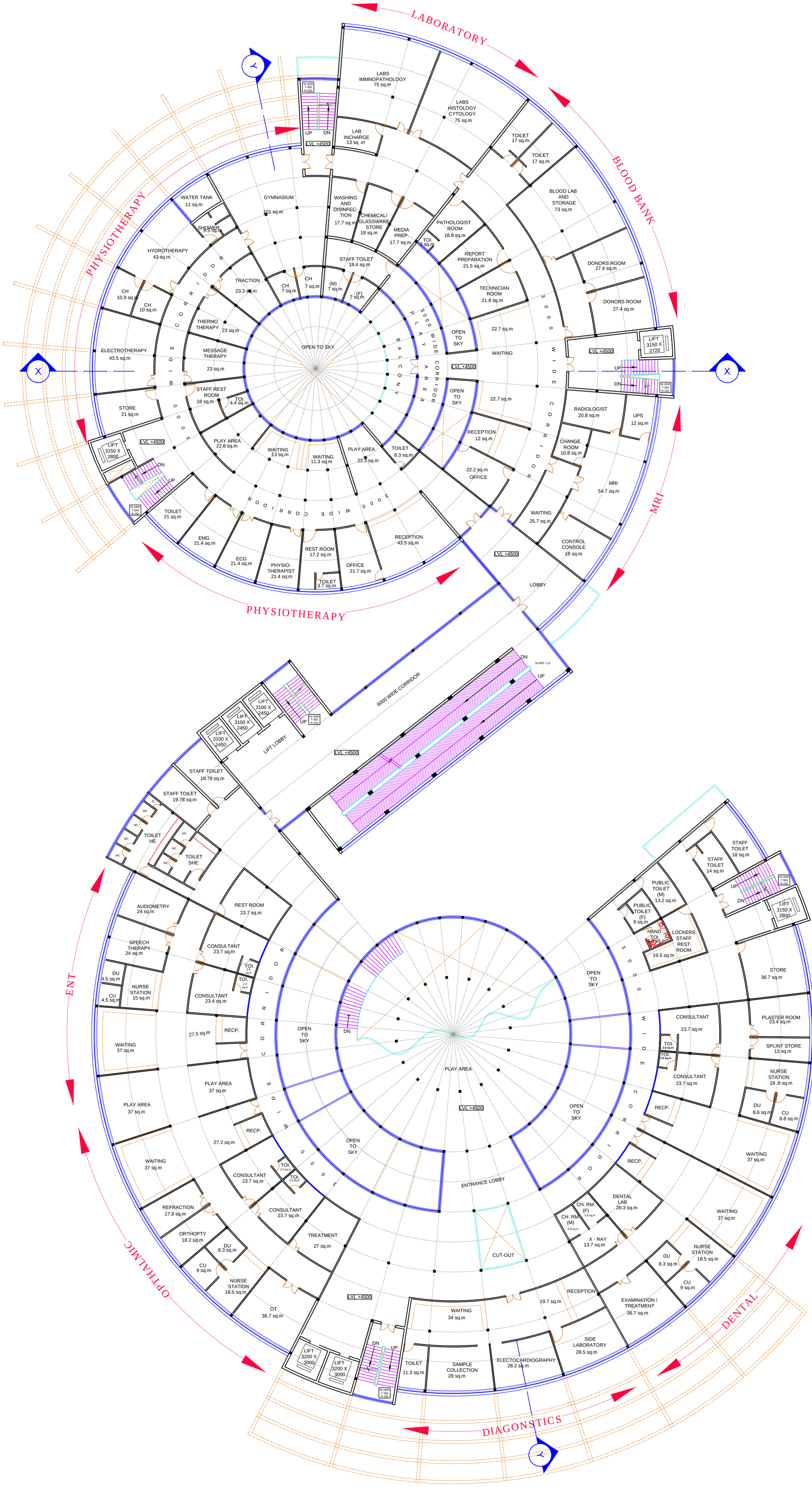
PATHOLOGY

EMERGENCY LABS

PAEDIATRIC

MEDICAL & SURGICAL

| | | | | |
|---|---|---|---|---|
| **Project Title :** CREATING A CHILD FRIENDLY ENVIRONMENT FOR CHILDREN'S HEALTH AND WELLNESS ( 100 BEDDED CHILDREN'S HOSPITAL) | **Drg Title :** GROUND FLOOR PLAN | **SUBMITTED BY :** VARSHA YADAV M.ARCH. 3RD YEAR 6TH SEMESTER ENROLL. NO. 1200109013 | **BBD UNIVERSITY** SCHOOL OF ARCHITECTURE & PLANNING | **GUIDED BY :** DR. PROF. MOHIT KUMAR AGARWAL AR. SATYAM SRIVASTAVA |

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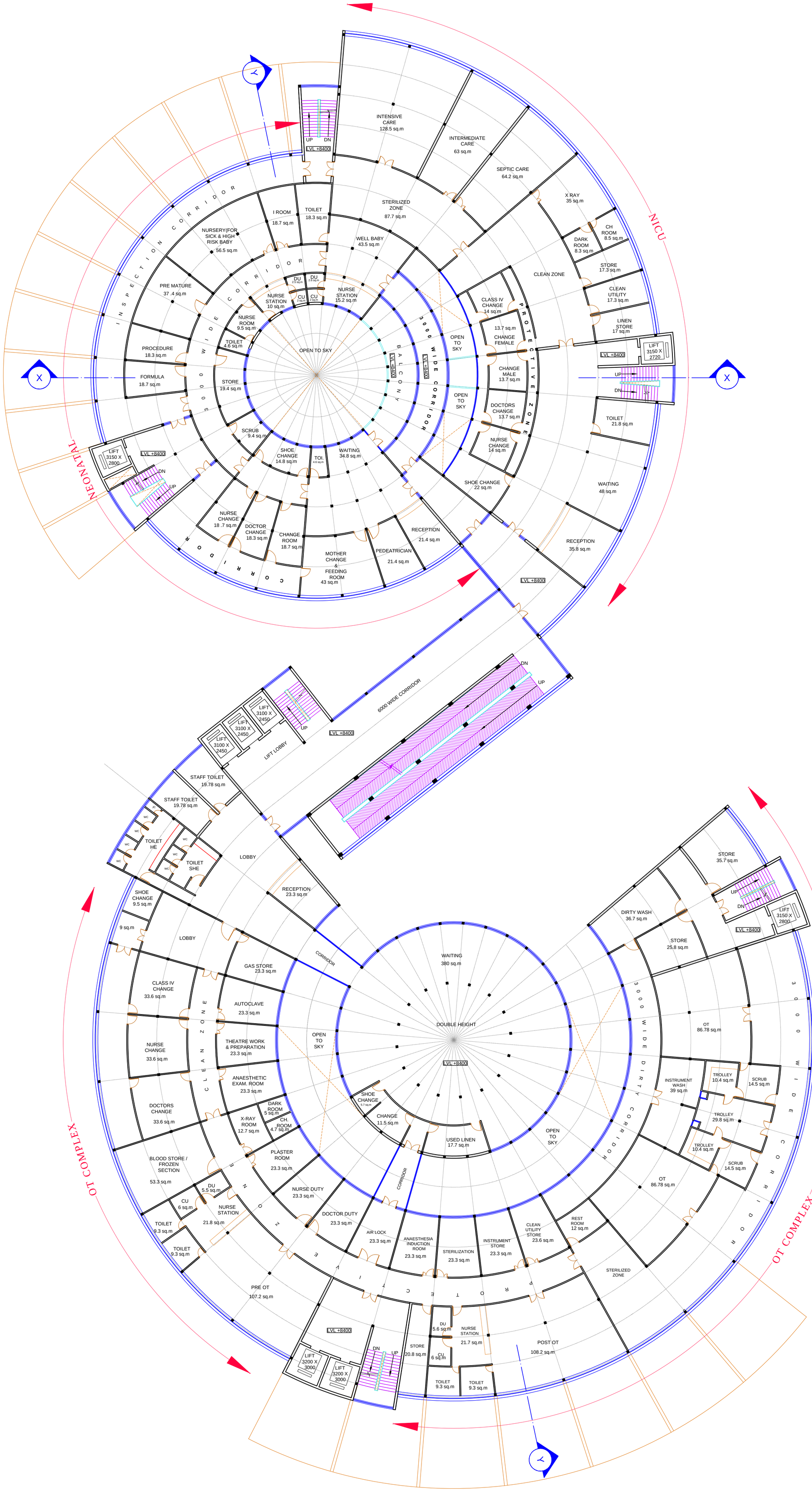
|---|---|---|---|---|
| **Project Title :**<br>CREATING A CHILD FRIENDLY ENVIRONMENT FOR CHILDREN'S HEALTH AND WELLNESS ( 100 BEDDED CHILDREN'S HOSPITAL) | **Drg Title :**<br>**FIRST FLOOR PLAN** | **SUBMITTED BY :**<br>VARSHA YADAV<br>M.ARCH. 3RD YEAR 6TH SEMESTER<br>ENROLL. NO. 1200109013 | **BBD UNIVERSITY**<br>SCHOOL OF ARCHITECTURE & PLANNING | **GUIDED BY :**<br>DR. PROF. MOHIT KUMAR AGARWAL<br>AR. SATYAM SRIVASTAVA |

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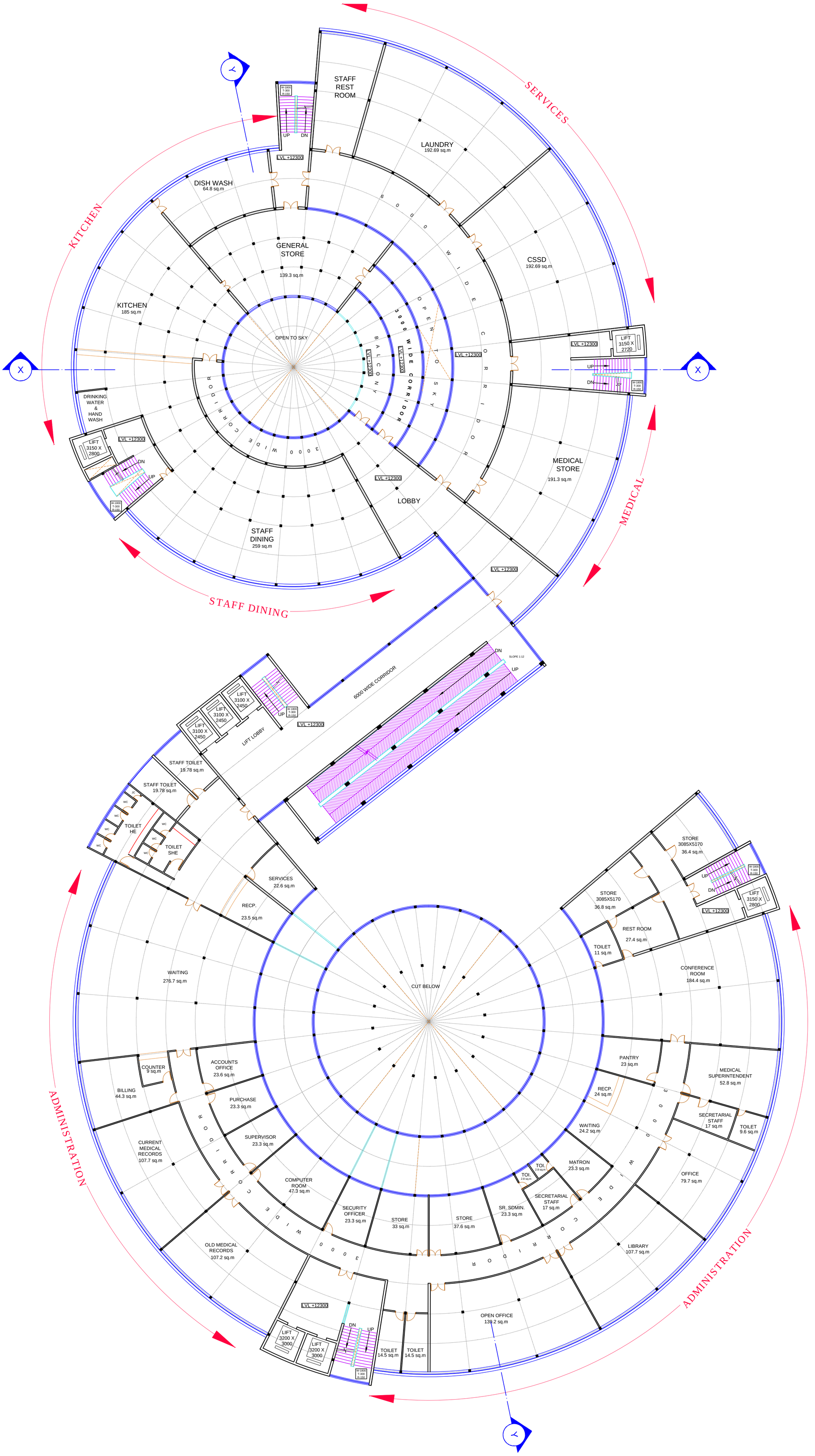
|---|---|---|---|---|
| **Project Title :**<br>CREATING A CHILD FRIENDLY ENVIRONMENT FOR CHILDREN'S HEALTH AND WELLNESS ( 100 BEDDED CHILDREN'S HOSPITAL) | **Drg Title :**<br>**SECOND FLOOR PLAN** | **SUBMITTED BY :**<br>VARSHA YADAV<br>M.ARCH. 3RD YEAR 6TH SEMESTER<br>ENROLL. NO. 1200109013 | **BBD UNIVERSITY**<br>SCHOOL OF ARCHITECTURE & PLANNING | **GUIDED BY :**<br>DR. PROF. MOHIT KUMAR AGARWAL<br>AR. SATYAM SRIVASTAVA |

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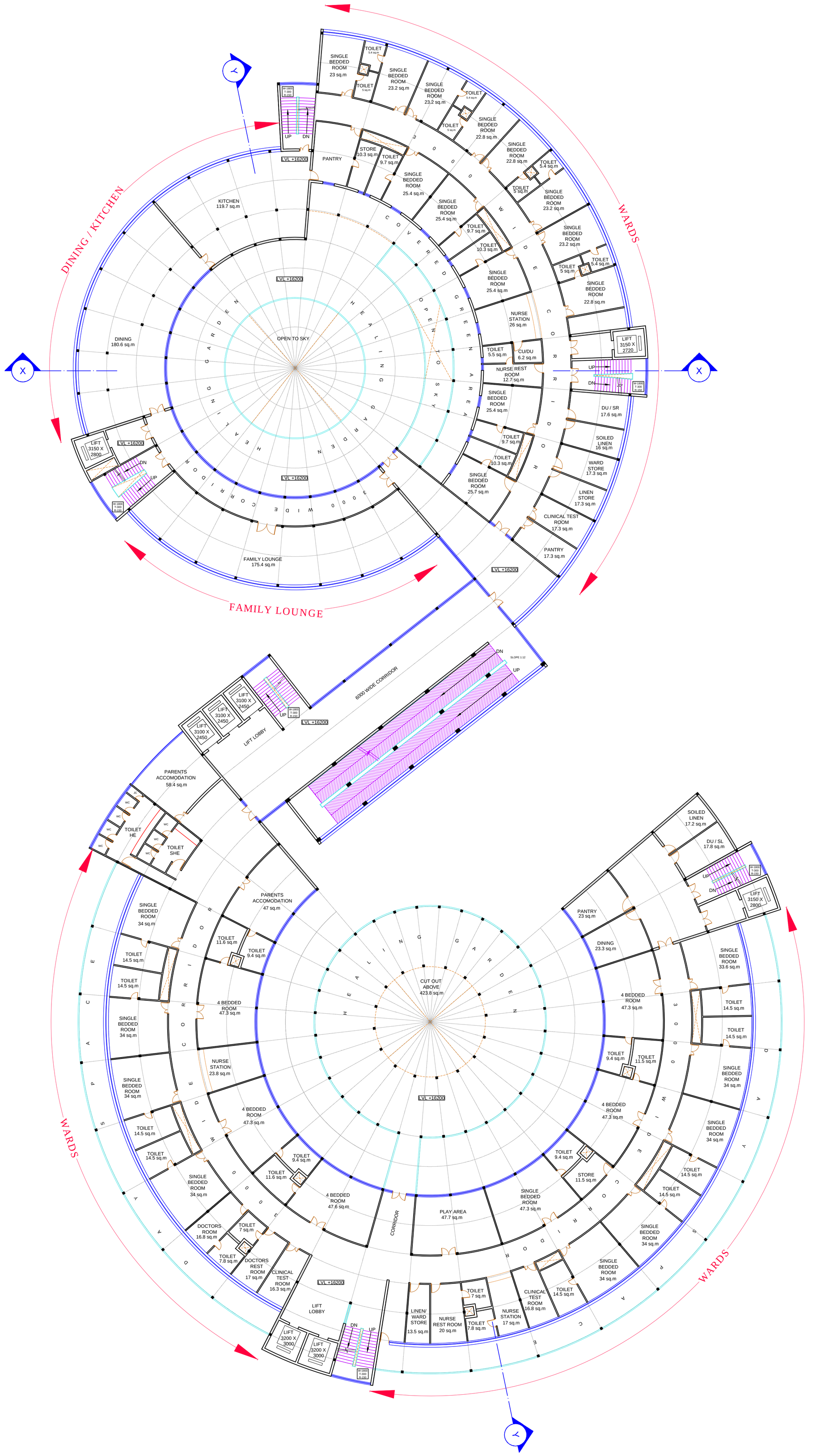
|---|---|---|---|---|
| **Project Title :**<br>CREATING A CHILD FRIENDLY ENVIRONMENT FOR CHILDREN'S HEALTH AND WELLNESS ( 100 BEDDED CHILDREN'S HOSPITAL) | **Drg Title :**<br>**THIRD FLOOR PLAN** | **SUBMITTED BY :**<br>VARSHA YADAV<br>M.ARCH. 3RD YEAR 6TH SEMESTER<br>ENROLL. NO. 1200109013 | **BBD UNIVERSITY**<br>SCHOOL OF ARCHITECTURE & PLANNING | **GUIDED BY :**<br>DR. PROF. MOHIT KUMAR AGARWAL<br>AR. SATYAM SRIVASTAVA |

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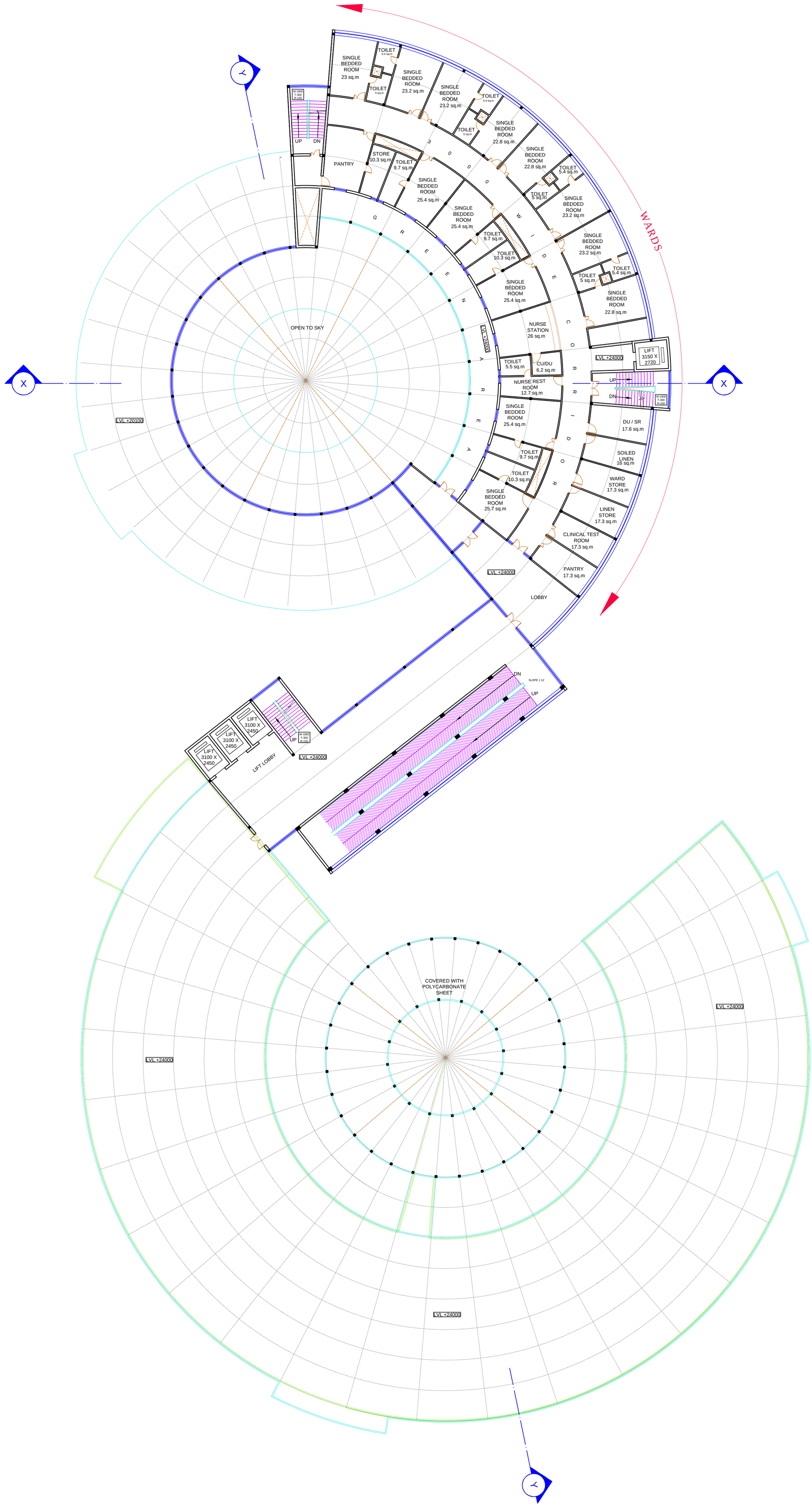
|---|---|---|---|---|
| **Project Title :**<br>CREATING A CHILD FRIENDLY ENVIRONMENT FOR CHILDREN'S HEALTH AND WELLNESS ( 100 BEDDED CHILDREN'S HOSPITAL) | **Drg Title :**<br>**FOURTH FLOOR PLAN** | **SUBMITTED BY :**<br>VARSHA YADAV<br>M.ARCH. 3RD YEAR 6TH SEMESTER<br>ENROLL. NO. 1200109013 | **BBD UNIVERSITY**<br>SCHOOL OF ARCHITECTURE & PLANNING | **GUIDED BY :**<br>DR. PROF. MOHIT KUMAR AGARWAL<br>AR. SATYAM SRIVASTAVA |

WARDS
TERRACE GARDEN
GREEN
6000 WIDE CORRIDOR
OPEN TO SKY
LVL +20100
SINGLE BEDDED ROOM 23 sq.m
TOILET 5.4 sq.m
TOILET 5 sq.m
SINGLE BEDDED ROOM 23.2 sq.m
SINGLE BEDDED ROOM 23.2 sq.m
TOILET 5.4 sq.m
TOILET 5 sq.m
SINGLE BEDDED ROOM 22.8 sq.m
SINGLE BEDDED ROOM 22.8 sq.m
TOILET 5.4 sq.m
TOILET 5 sq.m
SINGLE BEDDED ROOM 23.2 sq.m
SINGLE BEDDED ROOM 23.2 sq.m
TOILET 5.4 sq.m
TOILET 5 sq.m
SINGLE BEDDED ROOM 22.8 sq.m
LIFT 3150 X 2720
UP
DN
W-1800 T-300 R-150
DU / SR 17.6 sq.m
SOILED LINEN 16 sq.m
WARD STORE 17.3 sq.m
LINEN STORE 17.3 sq.m
CLINICAL TEST ROOM 17.3 sq.m
PANTRY 17.3 sq.m
LOBBY
NURSE STATION 26 sq.m
TOILET 5.5 sq.m
CU/DU 6.2 sq.m
NURSE REST ROOM 12.7 sq.m
SINGLE BEDDED ROOM 25.4 sq.m
TOILET 9.7 sq.m
TOILET 10.3 sq.m
SINGLE BEDDED ROOM 25.7 sq.m
STORE 10.3 sq.m
TOILET 9.7 sq.m
PANTRY
SINGLE BEDDED ROOM 25.4 sq.m
SINGLE BEDDED ROOM 25.4 sq.m
TOILET 9.7 sq.m
TOILET 10.3 sq.m
SINGLE BEDDED ROOM 25.4 sq.m
SLOPE 1:12
DN
UP
LIFT 3100 X 2450
LIFT LOBBY
PARENTS ACCOMODATION 58.4 sq.m
TOILET HE
TOILET SHE
SINGLE BEDDED ROOM 34 sq.m
TOILET 14.5 sq.m
TOILET 14.5 sq.m
SINGLE BEDDED ROOM 34 sq.m
TOILET 14.5 sq.m
TOILET 14.5 sq.m
SINGLE BEDDED ROOM 34 sq.m
PARENTS ACCOMODATION 47 sq.m
TOILET 11.6 sq.m
TOILET 9.4 sq.m
4 BEDDED ROOM 47.3 sq.m
NURSE STATION 23.8 sq.m
4 BEDDED ROOM 47.3 sq.m
TOILET 9.4 sq.m
TOILET 11.6 sq.m
4 BEDDED ROOM 47.6 sq.m
CORRIDOR
DOCTORS ROOM 16.8 sq.m
TOILET 7 sq.m
TOILET 7.8 sq.m
CLINICAL TEST ROOM 17 sq.m
LIFT LOBBY
LIFT 3200 X 3000
LIFT 3200 X 3000
DN
UP
CUT OUT
DOUBLE HEIGHT
HEALING GARDEN
PLAY AREA 47.7 sq.m
4 BEDDED ROOM 47.3 sq.m
LINEN/ WARD STORE 13.5 sq.m
NURSE REST ROOM 20 sq.m
TOILET 7 sq.m
TOILET 7.8 sq.m
CLINICAL TEST ROOM 16.8 sq.m
NURSE STATION 17 sq.m
TOILET 14.5 sq.m
SINGLE BEDDED ROOM 34 sq.m
STORE 11.5 sq.m
TOILET 9.4 sq.m
4 BEDDED ROOM 47.3 sq.m
4 BEDDED ROOM 47.3 sq.m
TOILET 9.4 sq.m
TOILET 11.5 sq.m
SINGLE BEDDED ROOM 34 sq.m
TOILET 14.5 sq.m
TOILET 14.5 sq.m
SINGLE BEDDED ROOM 34 sq.m
SINGLE BEDDED ROOM 33.6 sq.m
TOILET 14.5 sq.m
TOILET 14.5 sq.m
DINING 23.3 sq.m
PANTRY 23 sq.m
SOILED LINEN 17.2 sq.m
DU / SL 17.8 sq.m
UP
DN
LIFT 3150 X 2800
LVL +20100

| | | | | |
|---|---|---|---|---|
| **Project Title :**<br>CREATING A CHILD FRIENDLY ENVIRONMENT FOR CHILDREN'S HEALTH AND WELLNESS ( 100 BEDDED CHILDREN'S HOSPITAL) | **Drg Title :**<br>**FIFTH FLOOR PLAN** | **SUBMITTED BY :**<br>VARSHA YADAV<br>M.ARCH. 3RD YEAR 6TH SEMESTER<br>ENROLL. NO. 1200109013 | **BBD UNIVERSITY**<br>SCHOOL OF ARCHITECTURE & PLANNING | **GUIDED BY :**<br>DR. PROF. MOHIT KUMAR AGARWAL<br>AR. SATYAM SRIVASTAVA |

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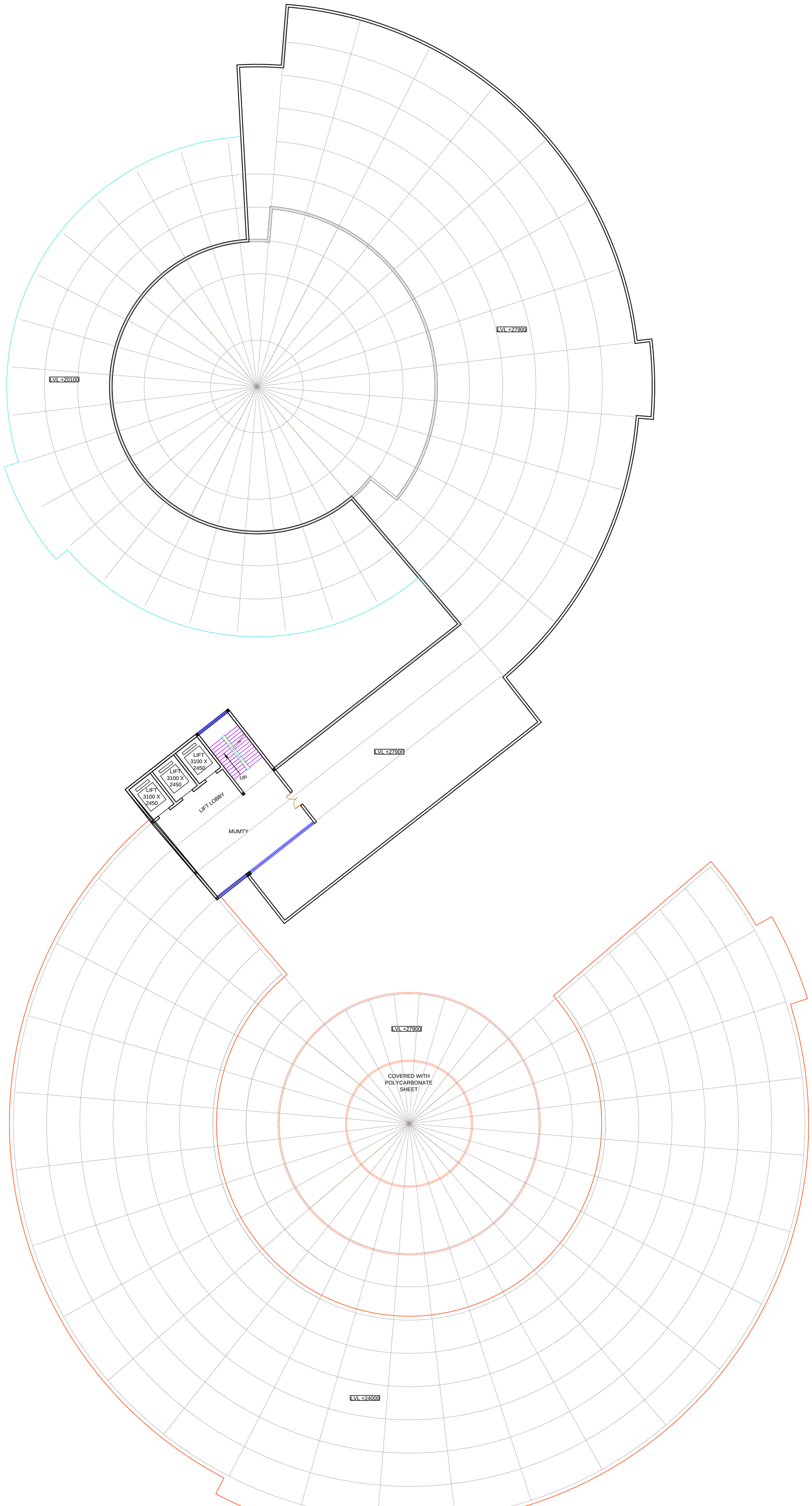
|---|---|---|---|---|
| CREATING A CHILD FRIENDLY ENVIRONMENT FOR CHILDREN'S HEALTH AND WELLNESS ( 100 BEDDED CHILDREN'S HOSPITAL) | SIXTH FLOOR PLAN | VARSHA YADAV<br>M.ARCH. 3RD YEAR 6TH SEMESTER<br>ENROLL. NO. 1200109013 | SCHOOL OF ARCHITECTURE & PLANNING | DR. PROF. MOHIT KUMAR AGARWAL<br>AR. SATYAM SRIVASTAVA |

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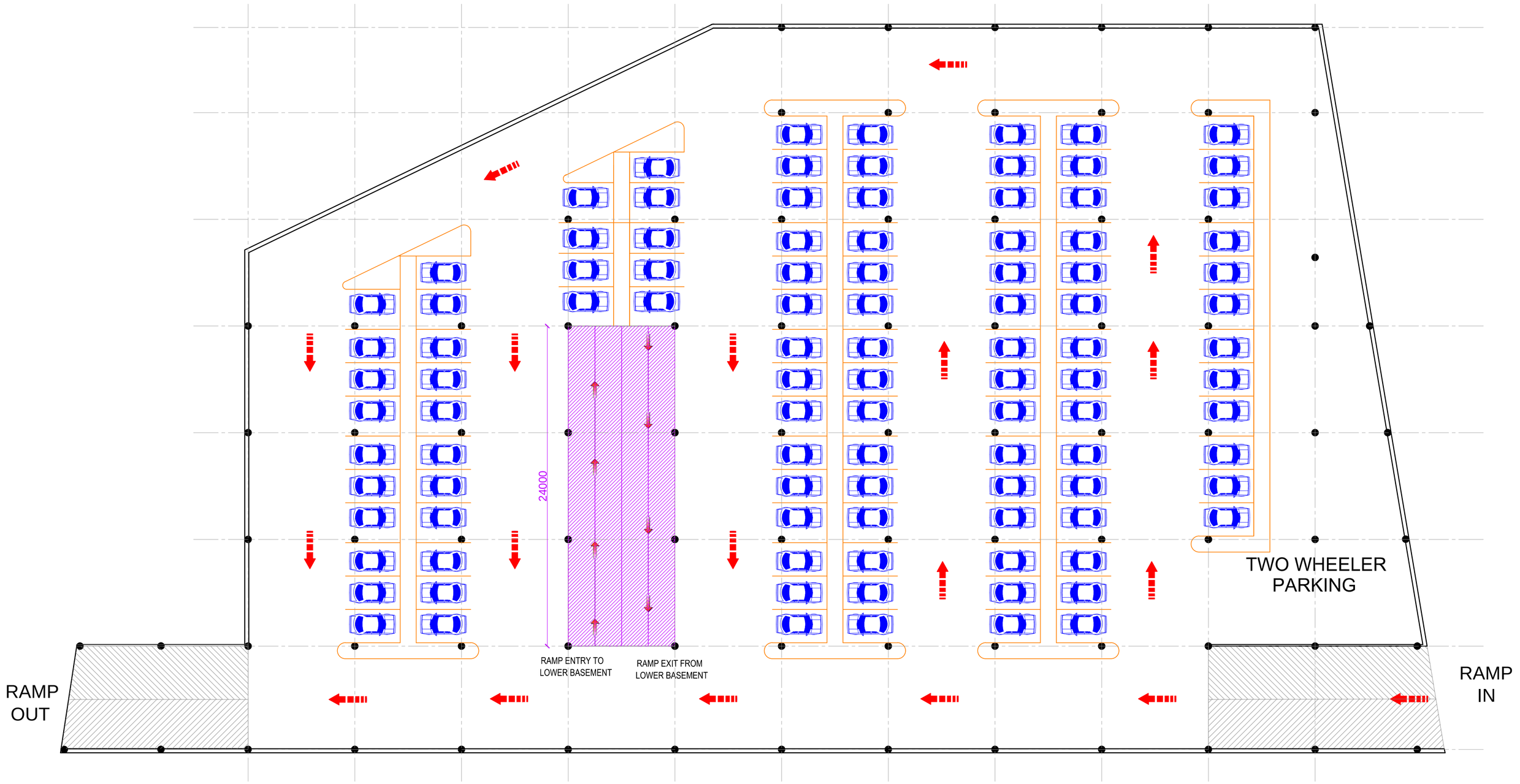
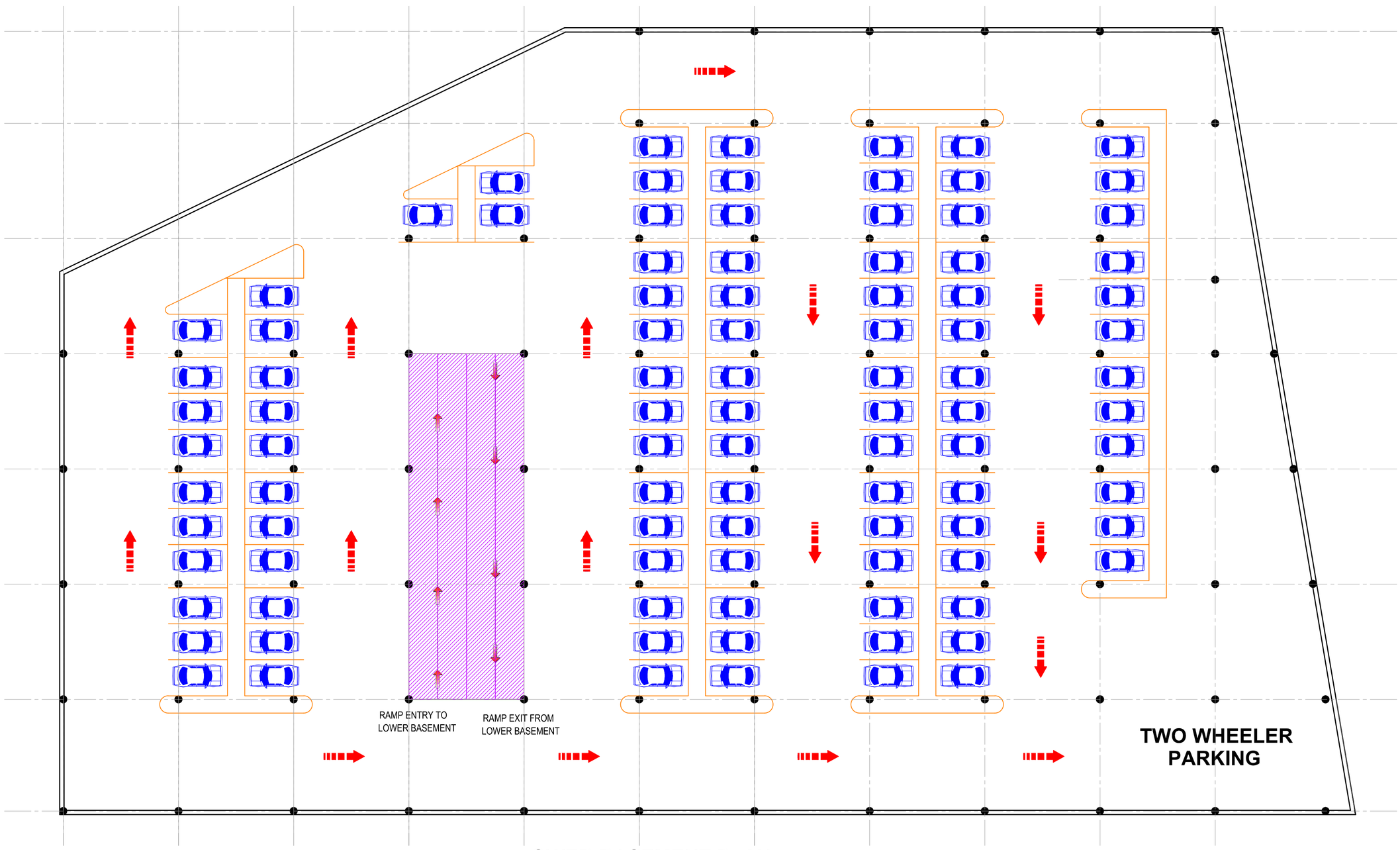
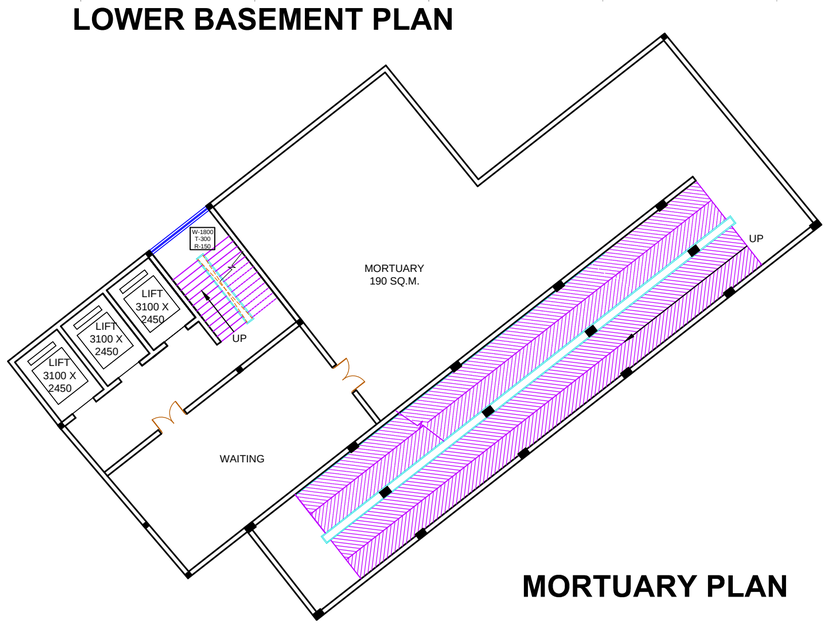
|---|---|---|---|---|
| **Project Title :**<br>CREATING A CHILD FRIENDLY ENVIRONMENT FOR CHILDREN'S HEALTH AND WELLNESS ( 100 BEDDED CHILDREN'S HOSPITAL) | **Drg Title :**<br>**TERRACE PLAN** | **SUBMITTED BY :**<br>VARSHA YADAV<br>M.ARCH. 3RD YEAR 6TH SEMESTER<br>ENROLL. NO. 1200109013 | **BBD UNIVERSITY**<br>SCHOOL OF ARCHITECTURE & PLANNING | **GUIDED BY :**<br>DR. PROF. MOHIT KUMAR AGARWAL<br>AR. SATYAM SRIVASTAVA |




**UPPER BASEMENT PLAN**

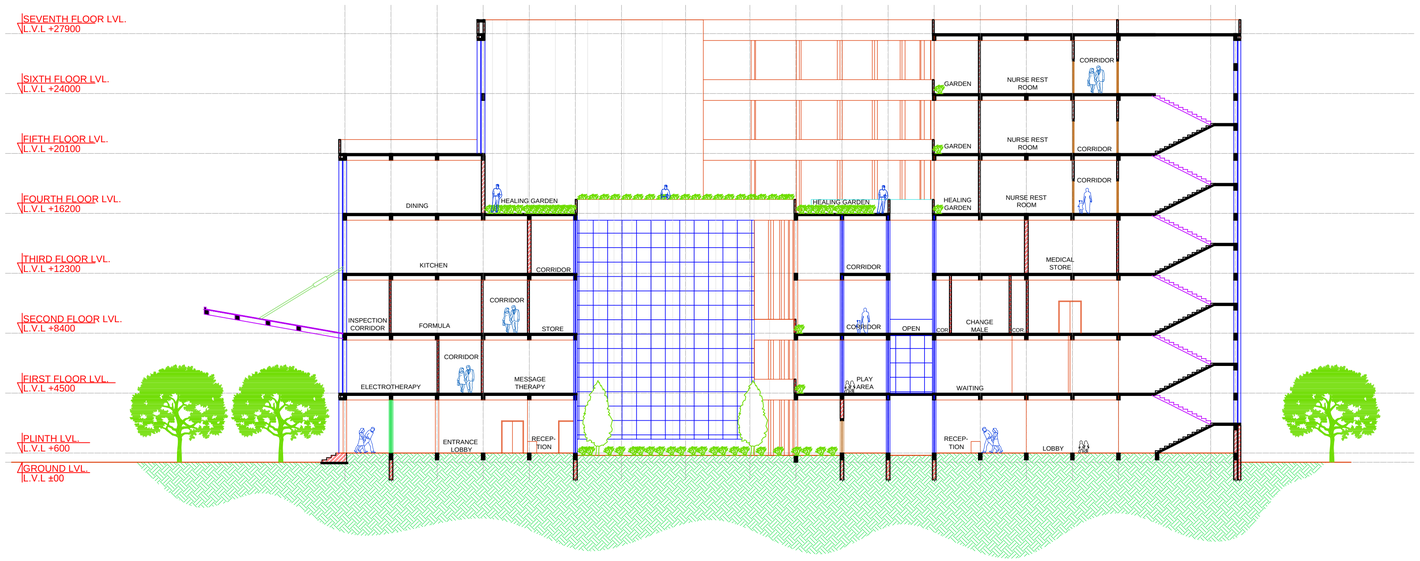



**LOWER BASEMENT PLAN**

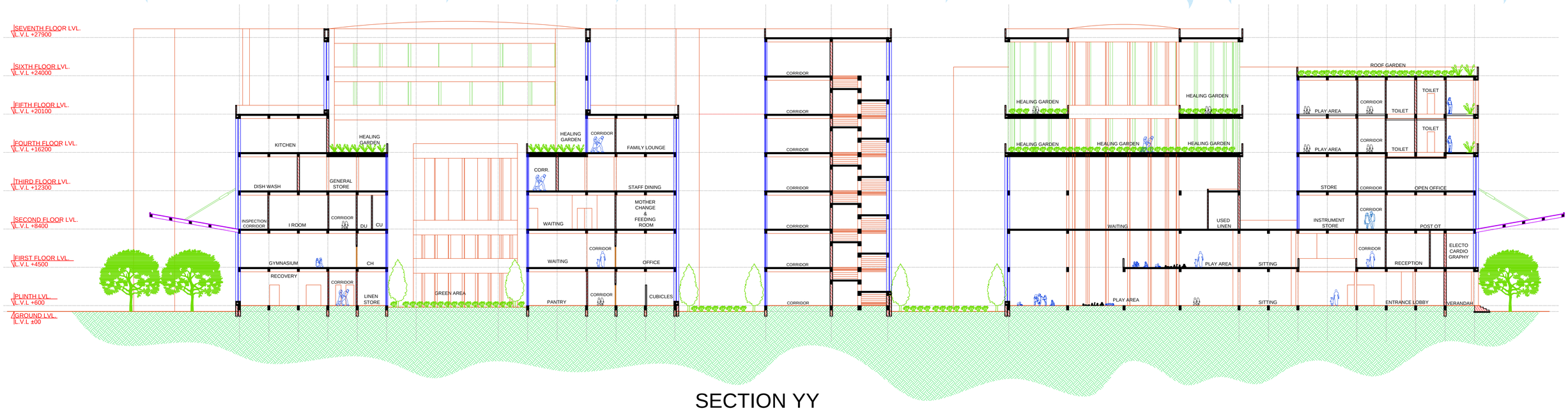



**MORTUARY PLAN**

| Project Title : | Drg Title : | SUBMITTED BY : | BBD UNIVERSITY | GUIDED BY : |
|---|---|---|---|---|
| CREATING A CHILD FRIENDLY ENVIRONMENT FOR CHILDREN'S HEALTH AND WELLNESS ( 100 BEDDED CHILDREN'S HOSPITAL) | **BASEMENT PLAN** | **VARSHA YADAV**<br>**M.ARCH. 3RD YEAR 6TH SEMESTER**<br>**ENROLL. NO. 1200109013** | **SCHOOL OF ARCHITECTURE & PLANNING** | **DR. PROF. MOHIT KUMAR AGARWAL**<br>**AR. SATYAM SRIVASTAVA** |




SECTION XX




SECTION YY

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|---|---|---|---|---|
| **Project Title :**<br>CREATING A CHILD FRIENDLY ENVIRONMENT FOR CHILDREN'S HEALTH AND WELLNESS ( 100 BEDDED CHILDREN'S HOSPITAL) | **Drg Title :**<br>**SECTIONS** | **SUBMITTED BY :**<br>VARSHA YADAV<br>M.ARCH. 3RD YEAR 6TH SEMESTER<br>ENROLL. NO. 1200109013 | **BBD UNIVERSITY**<br>SCHOOL OF ARCHITECTURE & PLANNING | **GUIDED BY :**<br>DR. PROF. MOHIT KUMAR AGARWAL<br>AR. SATYAM SRIVASTAVA |