CHAPTER 6

DESIGN PROPOSALS
6.1 Introduction

The very imperative part of any research is its execution. This chapter is the execution of the result obtained through this research onto the hospital premises of two types: 1. Existing hospital premises and 2. New proposal of Hospital.

The reason for the selection of such two types is to implement two sorts of designs: 1. Design of landscape which gives the solution for the already designed hospital premises and to restore the ratio of Satisfaction Factor (which is not prevailing) in the existing site. 2. Design of landscape which gives the innovative ideas of the new hospital premises which is yet to be designed, which will enable the freedom of design unlike the previous category.

Therefore, the two hospitals selected for the design implementation under the above two categories are: 1. Rajiv Gandhi Government Hospital, Chennai (Existing Hospital premises) and 2. Billroth General Hospital, Avadi, Chennai (Proposal for 2018)

6.2 Design of Existing Hospital:

The prime challenging factor in designing the existing hospital is the calculation of the Satisfaction factor obtained through the people and to fill the void through the design. That is the reason for taking up the hospital premises no.1 which was used in survey (Experiment no.1) in which already the satisfaction factor is calculated through the survey. Hence, this part of design for an existing hospital will support the existing data collected and the ratio derived.

This design also involves the calculation of the two ratios. The first ratio which deals with the existing areas of the hospital and the second ratio which deals with the output of the design, are the vital ratios to demonstrate the difference in the ratio of vegetation in that hospital. Basically, the ratio (R) is defined as the fraction of the area of the vegetation to the area of the total open space of the hospital premises.

The design of the existing hospital (Rajiv Gandhi Government Hospital, Chennai) underwent the following stages:

1. Site analysis, 2. Location of blocks, 3. Condition of Existing vegetation, 4. SWOT analysis, 5. Concept of the design and 6. CLDP (Comprehensive Landscape Development Plan) of the hospital premises.
Fig. 6.2.1 – Site Analysis

Fig. 6.2.2 – Location of Hospital Blocks
Fig 6.2.3 – Condition of Existing Vegetation

Fig 6.2.4 – SWOT Analysis
“Concept Arrival” pacts with the hypothesis undertaken from the objectives of this research. It started with one of the hypotheses which mentioned the five senses of the human being and the satisfaction factor of those five senses within the range of the comfort zone.

The above concept of the hospital no.1 is derived based on those five senses. Therefore, there are three layers created in the hospital premises after the analyses of the hospital site.

The layer 1 – which is the outer most ring – shall be concentrated for the Ear and Nose senses.

The layer 2 – which is the middle ring – shall be concentrated for the Eyes, Nose, Skin and Tongue senses.

The layer 3 – which is the inner most zone – shall be concentrated for the Eyes, Nose and Skin.
Fig. 6.2.5 – CLDP of the hospital premises no. 1
6.3 Design of Proposed Hospital:

This is the proposal of General Hospital by Billroth group of Hospitals by 2018 at North West part of Chennai – Near Oragadam and Avadi.

The site is to the maximum covered by residential area mostly. The pollution level of the area is comparatively less which is to be reckoned using precise measurement. This site is located on the Tituttani Highway. The area of the site is approximately 1,02,000 sq.m. The Landscape Design of this Hospital is done as follows: 1) The area of the building blocks are assumed to be in the ratio of 1:2.5 where 1 is the area of the buildings and 2.5 is the area of the total open space. 2) The ratio obtained from this research (1:2.5) for the vegetation to the open space is applied in this premises. 3) The concept of the design is almost similar to the previous design.

Fig 6.3.1 – Site Analysis
Fig 6.3.2 – Location of Buildings

Fig 6.3.3 – Concept of Design

Fig. 6.3.4 – Concept of Landscaping in the hospital premises no. 2
Fig. 6.3.5 – Comprehensive Landscape Development Plan of the Proposed Hospital

COMPREHENSIVE LANDSCAPE DEVELOPMENT PLAN
for the proposed hospital premises, Chennai
Implementation of the results of the research into the Design Solutions:

Design No. 1:

Total area of the Hospital no.1 is 61,336.0716 sq.m

Total area of the open spaces in Hospital no. 1 is 22,114.0452 sq.m.

Area of the existing vegetation is 12,637 sq.m.

<table>
<thead>
<tr>
<th>Ratio</th>
<th>Area</th>
<th>Conversion</th>
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<tbody>
<tr>
<td>Existing</td>
<td>1:1.75</td>
<td>1.75 – 22,115m²</td>
</tr>
<tr>
<td></td>
<td>1 – 12,637m²</td>
<td></td>
</tr>
<tr>
<td>Designed</td>
<td>1:2.5</td>
<td>2.5 – 22,115m²</td>
</tr>
<tr>
<td></td>
<td>1 – 18,070m²</td>
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</tr>
</tbody>
</table>

Design No. 2:

Total area of the Hospital no. 2 is approximately 1,01,250 sq.m.

Allotted area for the building blocks is 40,500 sq.m.

Total area of the open spaces in Hospital no.2 is 60,750 sq.m.

Area of the required vegetation according to the ratio 1:2.5 for the Hospital no.2 is 24,000sq.m.

<table>
<thead>
<tr>
<th>Ratio</th>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>60,750 m²</td>
</tr>
<tr>
<td>2.5</td>
<td>24,000 m²</td>
</tr>
</tbody>
</table>

Therefore, through these designs in both conditions – an existing hospital premises and a new proposal, it was proven in terms of implementation of the ratios obtained through the research.

“Designs may vary from designer to designer. Every design shall have enormous and different solutions according to the perspective and the treatment of the design by the designer. But, the solution for a research will be and must be unique. Therefore, the implementation of the solution of a research onto a design will carry the same result that the research had given.”
6.4 Design of Internal Landscaping:

To the context of this research, the design of internal landscaping is required to be done in very innovative way. There are so many challenges and trials to be faced while designing the internal landscaping of a hospital building.

These are few among those challenges:

1. The irrigation system of the internal vegetation must not mess up the floors, walkways, corridors, staircases, etc., as the entire block is used by the public, especially the patients who are sick by physique.

2. The contact of the vegetation to the public may lead to unnecessary nuisances such as plucking the leaves or flowers, breaking the pots, etc. Hence the design must be innovative in such a way that the benefits of the vegetation must reach the users and the vegetation must sustain without the external hazards.

3. As the internal landscaping ratio was obtained as 1:0.459 which means half of the volume of the space (0.459) to be planted with green elements, is again one of the biggest challenges to be executed.

4. The maintenance of the internal landscaping is another challenge which will be tougher if not properly planned, but will be easier and smoother in case of well-planned and innovative landscape design.

5. Selection of vegetation depends on the requirement of the site. Listing out the required species for the required space is another biggest task in internal landscaping.

6. Categorizing the five senses: Toilet space requires lot of aromatic plants and deoxidizing plants, but not the dehumidifying plants as the toilet area is already a humid space. Hence categorizing the five senses according to the necessity of every room is in the hands of the designer.

These are some of the challenges the internal landscaping design may encounter. The best solutions for all the challenges may be provided by giving the very innovative ideas through which all the above said problems and challenges shall be faced.
Innovative ideas No.1 - Sunken Planter Box

Fig 6.4.1 – Sunken Planter Box – View 1
The edge of the room shall be designed with the sunken linear box to hold the vegetation.

Fig 6.4.2 – Sunken Planter Box – View 2
It shall be a proper and undisturbed internal landscaping for the rooms in which patients are admitted.

Fig 6.4.3 – Sunken Planter Box – View 3
The patients shall have the uninterrupted view of the internal green elements.
Innovative idea no. 2 – Floating Planter Box

Fig 6.4.4 shows the plan of the patient ward with the floating planter box fixed in the wall in the lintel level. Fig 6.4.5 and 6.4.5 show the views of the planter box in the lintel level in the patients’ room which can be a creeper, vine and very small plants which are called herbs or knee level plant.
Innovative idea no. 3 – Wall screens

Fig 6.5.6 Worms view of the room

Fig 6.5.7 Aerial view- 1 of the room

Fig 6.5.8 Aerial view- 2 of the room

Fig 6.5.9 Rear view of the room

Fig 6.5.10 shows the view of the room which has layers of planter boxes within which the creepers and vines shall be grown and shall be treated as wall screens in its mature growth. Selected species shall give all the benefits to the users in the room.
Innovative idea no. 4 – Wall Mounted Planter Boxes

This Concept of Wall Planter can be implemented on all the walls except the external walls of the building. All the walls which come inside the buildings, in-between two rooms or any partition wall shall be designed with the wall planter in the top portion of the wall leaving a gap of minimum one meter from the ceiling.

Water irrigation & Drainage: There shall be two pipes fixed at the top and bottom. The pipe at the top shall be used for the irrigation of the planter boxes and the one at the bottom shall collect the excess water from the box. This design may reduce the manual labor and also not spoil the internal space by water leakage. A single operating system can be worked out for irrigating to all the planter boxes. The pipes for both top and bottom must be fixed in a series connecting all the planters. It shall be designed in such a way that those two pipes are not exposed to spoil the visual pleasing of the room. Small ducts shall also be provided for the same purpose.

Materials used for the planter boxes: For smaller planter boxes – Timber, Mud pots, Ceramic pots, etc. For bigger planter boxes – Concrete boxes, brick planters, Terracota Boxes, Clay boxes, etc
6.5 Detail drawings of Internal Landscaping

Fig 6.5.1 – Special ward patient’s single bedroom

A sample room of 3m X 3m for a single bedroom for patients is shown with the details of internal landscaping on the lower level, while below shown is double bedroom for patients.

Fig 6.5.2 - Patients’ Ward – Double bedroom
The internal landscaping of the patients’ room is considered a very important implementation in this research as this space is the aim of the entire study. The internal landscaping is mainly categorized under the following divisions: 1. The Floor level planting, 2. Window – Sill level planting, 3. Lintel level planting and 4. Wall mounted planting.

All these planting shall be done in terms of planter boxes, either in smaller boxes of size, say 30cm x 30cm, or in the bigger boxes of size, say 1m x 10m (which are placed in the edges of the corridors). Though the sizes of the planter boxes vary, the gist of the internal landscaping is to grow the plants / green elements in the boxes and not spread on the floor / ground as in the terrace landscaping. The allocation of the planter boxes within the patients’ room is another important design as the visual on the green elements by the patients is one of the aims in this implementation.
Corridors of the hospital buildings shall be designed as per the Fig 6.5.4. The planter box shall be linear in size as to the length of the corridor by itself. It shall be placed in one side and the other side shall be left free of planting for the clarity of the walkway. The pipe line of the water irrigation shall be laid as a single – monitoring – system. All the water pipes for the irrigation shall have the dropping water supply, rather than free flow irrigation system. Another pipe shall be provided in the very beneath of the planter box which shall evacuate the excess water of the planter box without messing up the corridor.
The Plants have the ability to minimize the usage of Air Conditioning unit, when they are properly planted with the proper amount of ratio calculation derived from this research. The count of the population and the amount of time they spend inside the room are the vital data for the selection of the quantity of the green elements.

Fig 6.5.7 shows the details of the Wall mounted landscaping, Plants on Trolleys and the Lintel – Screen – Climbers. These are some of the innovative ideas of the internal landscaping of the hospital premises. The innovation in internal landscaping is a prolonged and non-ending process / step in this research.

Compound wall or any other partition wall inside the hospital premises shall be avoided and the hedges, climbers or any other green elements shall be used on behalf of the walls. Thorny vegetation shall be avoided in places where users are around, as their contact to the vegetation in any possibility may harm them. The wall and lintels holding the sand-base for the plants must by treated with the water – proof construction.
Fig 6.5.7 – Details of the Wall Landscaping
Fig 6.5.8 – Details of the Fins and Lintel Planters