

TO BE POOR AND SICK IN INDIA

Karnataka





Mortuary

exit

GROUND FLOOR PLAN



SPATIAL SYNTHESIS FOR HEALING

Deinstitutionalizing the institutional experience of rural healthcare settings through design



Creating an axis and nodes

The programmes were translated into a building complex and zoned to form an axis and smaller nodes. This makes way finding and workflow easier



Linear blocks along the north south axis

The major blocks were stretched to form linear volumes ,oriented along the north south axis ,for better privacy,cross ventilation and reducing heat gain from south.



No corridors, only verandahs and courtyards

The blocks were staggered to create pleasant pockets of courtyards and open verandahs in stead of narrow corridors



Staggering to create green pockets in all waiting zones

Green pockets that let in filtered light,were located along the major axes.Patient waiting areas and in patient wards were zoned around it.

SITE SECTIONAL ELEVATION AA'







Maximizing energy efficiency through planning

The roof area maximised for shading allows tapping solar energy through PVCs.Roofs are designed so that 100% rain water is harvested through the raingardens.

DESIGN STRATEGIES



The Modular Grid

The Indian factory size of prefab components which are in multiples of 1.22 m was adopted. The 1.22m x 1.22 m grid was followed in overall planning to maximize the benefits of modular construction in the Indian context.

A PREFABRICATION MODEL FOR RURAL INDIA





SECTIONAL VIEW AA' THROUGH THE CONSULTATION UNITS - GENERAL CLINIC



BAMBOO MAT

PRECAST CONCRETE

STEEL BOX SECTION

PREFAB CONCRETE

Factory produced

components

Transported by trucks to



HOMS

DISMANTLABLE PREFABRICATED STEEL STRUCTURE

The design of all blocks follows the 1.22m x 1.22 m grid, which is ideal for the Indian prefabricated industrial market size and provides flexibility according to context. All factory produced components are transported by road since villages across the country rely on road connectivity.The materials are then fixed on site by local labourers



IDEAL FOR THE RURAL INDIAN CONTEXT

-Structures are light and require very little foundation -Small components for easy transportation even to difficult terrains -The erection is simple and fast and requires no high skills -Generates income for local labour which is abundant -Non availability of technology such as cranes in rural India



MATERIAL	QUANTITY	COST
Tetrapack Roof	153 sq m * 100 INR	15300
Steel	1200 kg * 43 INR	51600
Bison board	23 nos * 31 INR	713IN
Plywood	12 nos * 46.8 INR	561 IN
Cane Panel Type 1	42 nos * 45 INR	1890
Cane Panel Type 2	24 nos * 35 INR	840 IN
Rammed Earth Wall	11 cmt * 4200 INR	46200
Windows	16 nos * 3000 INR	48000
Doors	7 nos * 40001NR	28000
Floor slab panel	432nos* 90 INR	38880
Footing	12 nos * 270 INR	3240
For 133sqm builtup area,taking 25% extra for sites,services*		2,94,0
Approximate cost per sq mt		2210 I
Total built up area-2400sq	mt	
Total site area-6339sq mt	(1.56 acres)	



India's villages often face acute electricity and water shortage.The CHC design hence focuses on renewable energy, water strategies and passive building techniques for ecological sustainability. The open verandahs and waiting areas further reduce occupancy loads inside the patient zones

USING LOCAL MATERIALS LIKE EARTH, BAMBOO, POTS ETC IN PREFABRICATION

Locally sourced **Prefabricated Stabilized Rammed Earth Blocks** of size 1.22m x 2.44m x.3m were used in the front facde for their thermal insulation properties.



Vibrant colourful earthen pots inserted into these blocks act as venturi tubes in funneling the **breeze** into the adjacent waiting areas keeping them cool.

Local materials incorporated into the prefabricated design adds relevance and cultural value

References:

Planning Commission India,National Rural Health Mission World Health Statistics,2013,WHO,ICMR Indian Rural Health Statistics,2015





Filtered rainwater o sump tank

INR
INR
R
NR
R
INR
INR
INR
INR
NR
30 INR
NR(33.25 USD)

* does not include solar panels



Easy to fix on site by unskilled local labour abundant in India



SOCIO CULTURAL CONTEXT

The value placed on family relationships in India means patients are often accompanied by many members, awaiting the outcome of their loved ones.

Hence large open family waiting spaces overlooking green courtyards were an integral part of the plan.



A HEALING ENVIRONMENT

The design involved replacing unventilated hallways -that spread infection, dark unpleasant waiting halls and treatment rooms, service rooms that dont work with ventilated inside out corridors, verandahs and courtyard, well lit rooms with pleasant views, naturally breathing structural systems that need not rely on mechanical services and introducing ancilliary spaces /qualities/elements that "deinstitutionalize the institutional experience"



PATIENT CENTRIC DESIGN

All the inpatient beds have a view of the courtyards.Pleasant views and natural light help in fast recovery.

Bright vibrant colours were added for the fenestrations to make the environment playful and easier for way finding.Patient privacy was also dealt with in planning beds,zoning waiting areas etc.



DOUBLE ROOF SYSYTEM

The double roof structure was incorporated 1. as a climate responsive element to cut down heat gain 2. to gain large roof area for solar installation 3. for easy rain water channeling and harvesting



THE TREATMENT AND RECHARGE POND

The **grey water** from the non patient toilets and kitchens are treated by reed beds in the treatment pond .The treated water is used for watering plants from the open pond which also becomes a pleasant visual landscape element .The accommodation is zoned around the water body creating pleasnt living conditions for the staff.

