

concept

TERi

TERI Energy Research Institute, South Regional Centre - Bangalore

### Site Analysis

wind movement being from the south to north and the presence of the rainfall flowing along the southern side of the site - it was imperative to devise a system that would deflect the winds from blowing into the building. The sun's path of travel during the day was along the southern face of the site. Hence a system of blank walls was incorporated that would screen the structure from the direct harsh southern rays of the sun. Hence the whole building is designed facing the north. This helped to the building to be able to benefit from the diffused light on the northern side and also ensured a lot of shade to this face as it was away from the sun's primary orbit. Hence spaces like the central court and various open verandahs could be used as meeting and informal discussion spaces even through the day.

Handling of storm water:  
Roofing water needs to be treated as it flows in ODFD (Overhead Flow) Pipe. Using recirculation, settling tanks, filtration etc.

It would be a modular building and in an approach which is apt for ISIR.

### Zoning

The irregularly long shape of the site and its bounding areas made it imperative to follow a linear design strategy with common activities forming the core between the offices and the guesthouses. This helped set clearly the perimeters of each zone and yet helped them come together as a singular design concept.

The boundaries of the site were the major key players in determining the basic zoning and orientation of the building. The site is flanked by roads on the northern and eastern faces. The western side of the site is occupied by a club property. The southern side of the site has a rainfall that carries the sewage and untreated water from the city. This rainfall flows along the whole southern side of the site. The road on the northern side of the site is flanked by residences. The road on the eastern side is the main access road. The office part of the complex is located adjacent to the main road for easy access to various office personnel. The guest houses were located on the far western of the site as this was a considerably quieter zone. These were linked together by several common facilities that included the dining hall, a recreation room, and a small health room.

### Workings of the Building Systems

unhygienic foul breeze blowing from south (high pressure zone)

heat from solar rays falling on the south wing wall (thick kadappa wall)

convective domes rising up due to heating of air in cavity wall (low pressure zone)

cool breeze drawn in by conventional current system to equilibrate pressure

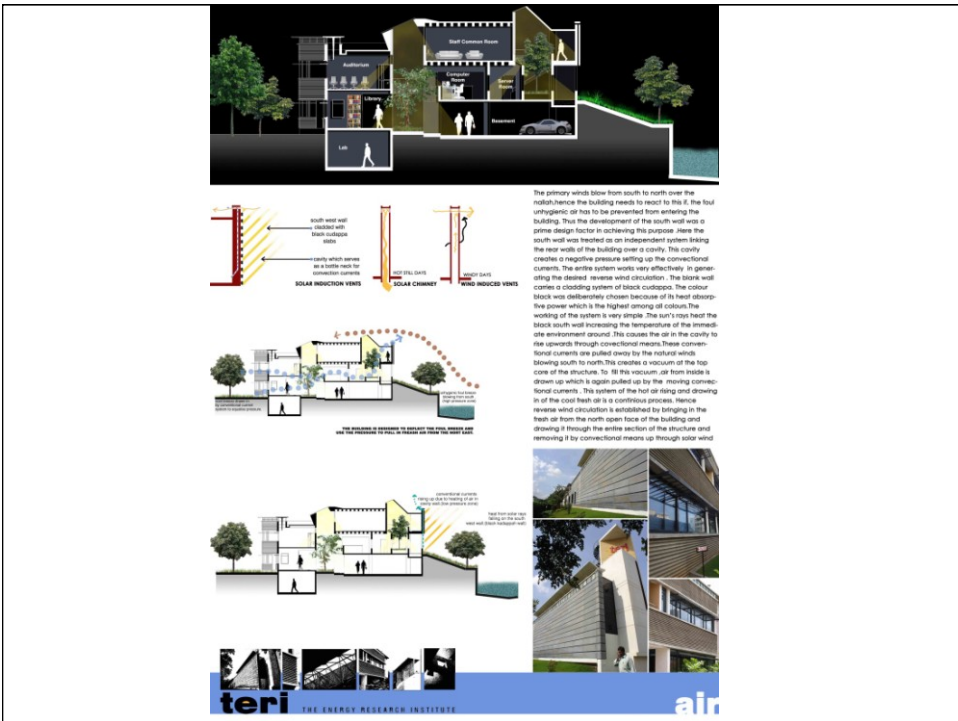
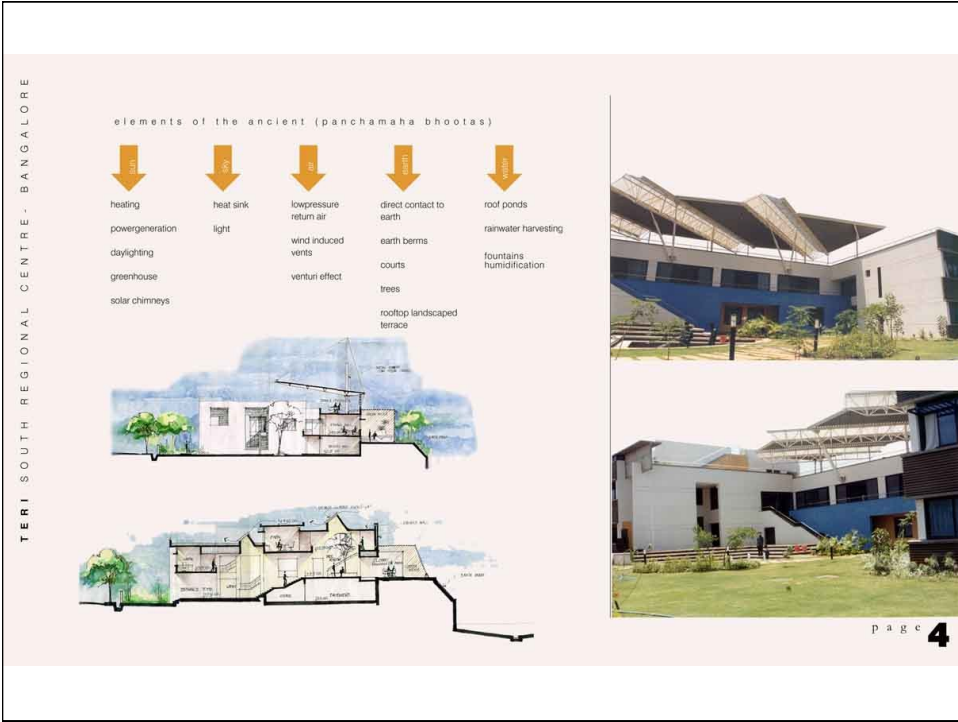
second floor plan

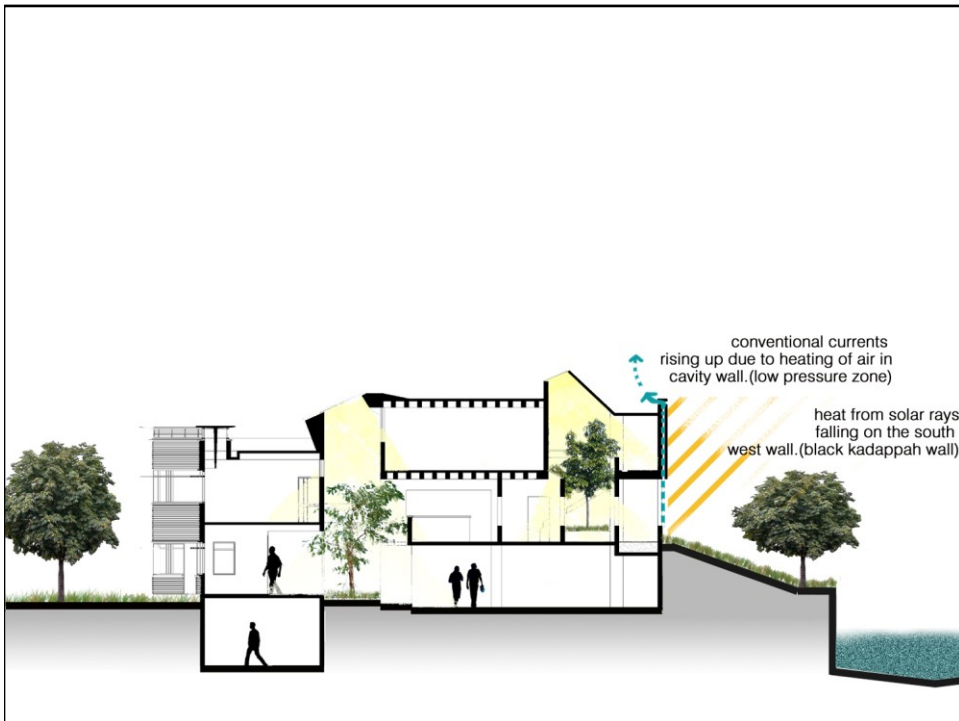
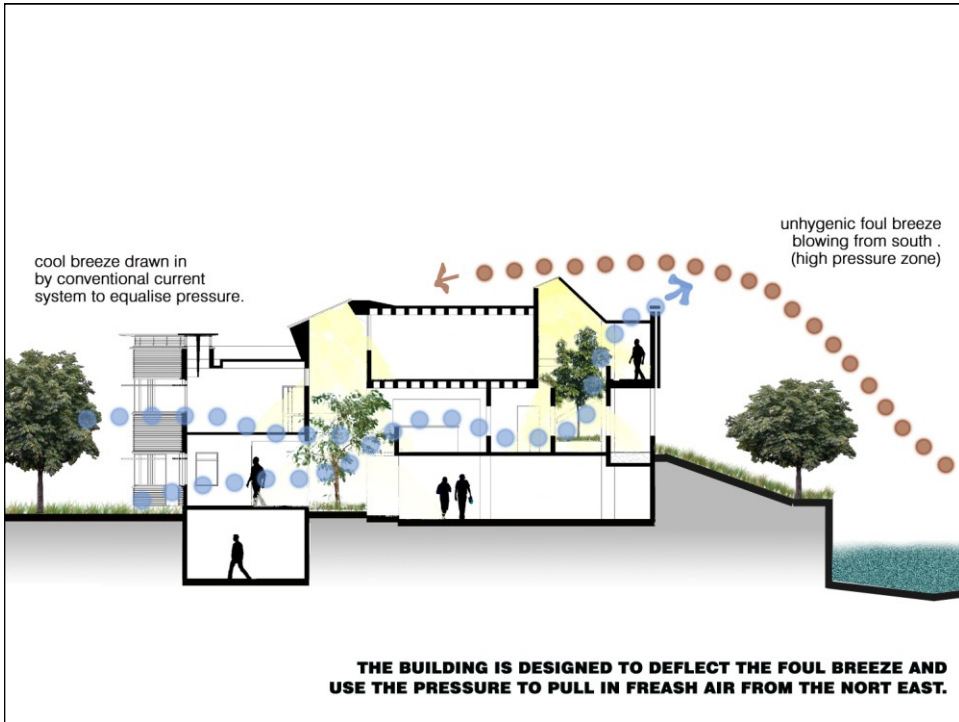
first floor plan

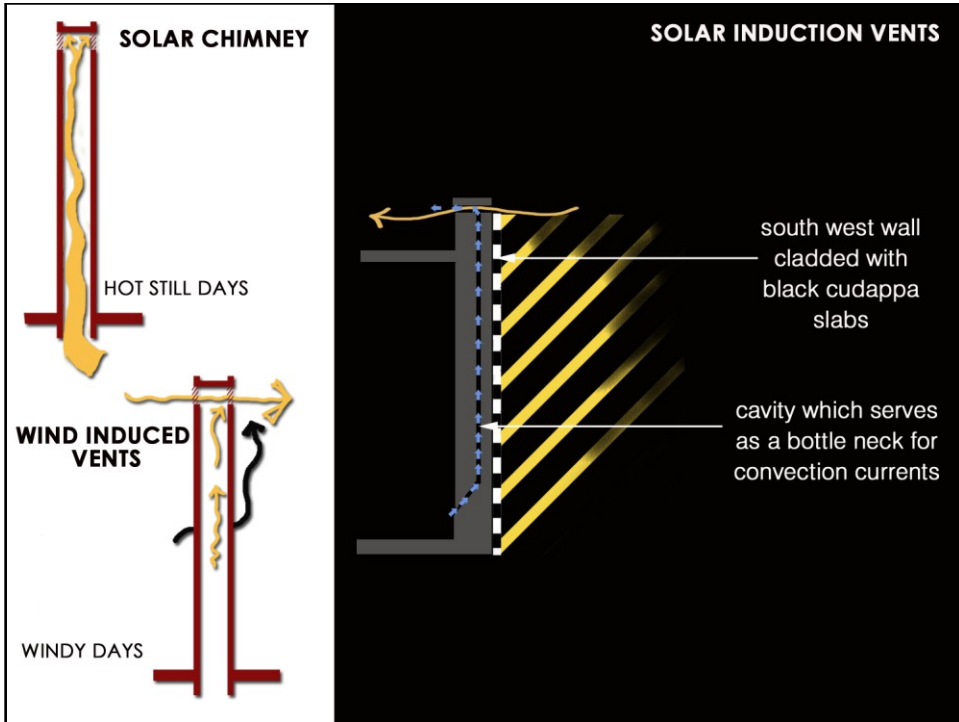
ground floor plan

# PLANS

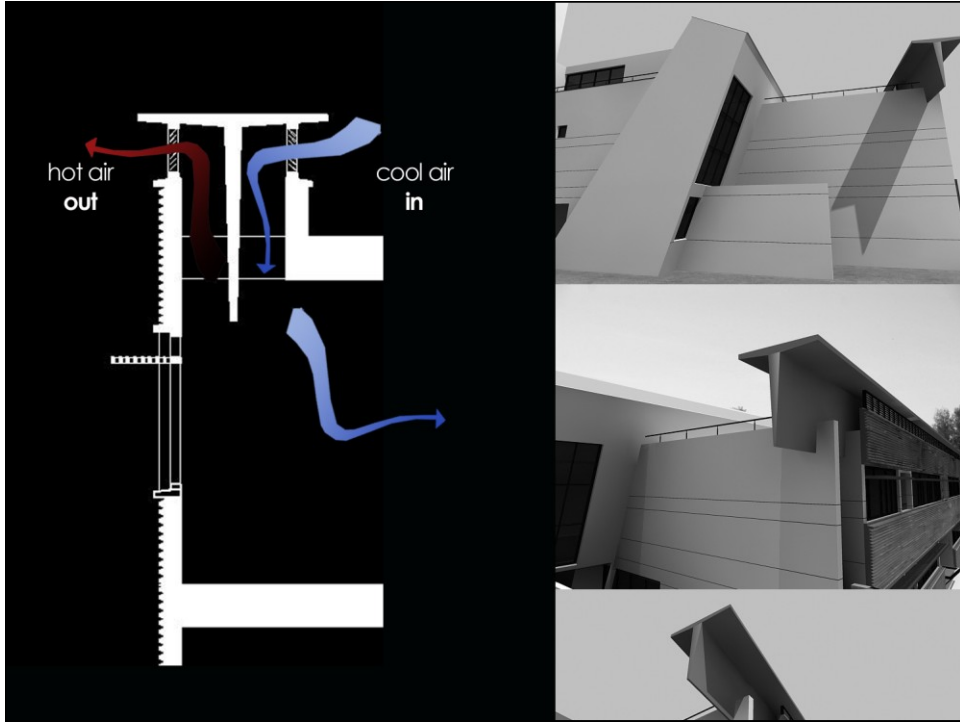
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**DETAILS OF SOLAR CHIMNEY**

Photo voltaic cells are used to capture the sun energy that generating electrical energy to feed various stations. These photovoltaic cells have been arranged in line with the primary orbit of the sun (about 22.5 degrees from the west line). The panel are integrated with the dynamic truss to optimize the generation of energy. The sun's energy is further used in the form of solar heaters, which is used to generate all the hot water needed in the guest house.

The thermal comfort levels are maintained by the use of filter slabs which provides for insulation between the inside and the outside of the building. Filter slabs are designed with alternate panel of concrete and hollow blocks. The hollow blocks helps in reducing the transmission of heat from the outside to the inside of the building.

**SUN**

THE BUILDING IS DESIGNED SO THAT OVER PART OF THE BUILDING IS NATURALLY HEATED AND HAS MINIMAL NET COST.


With an incredible lighting system as that of the sun it captures insolation to incorporate daylighting by natural means as a major design feature.

The structure houses two main shafts of skylights that cut across the whole section of the office building. The whole inner space that is enclosed receives the same of one space within the other also given is feature for all movement to allow for the concept of reverse wind circulation for work.

The contribution of shaft spaces into the smaller workspaces helps light to carry through to even the darkest spaces. The inner spaces house within them subsidiary skylights that further the light into the inner floorplate as one moves through the building one perceives alternate shades of well lit and shaded spaces. The fringe about a sense of the contribution of light through and through.




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schematic section

Images



The central court which connects the office complex and the guest house section plays an important role as a space generator. The spaces around it follow the age old concept of the courtyard that are outside but are shaded, hence giving a feel of 'withiner' to it. The central court houses an amphitheatre that acts as an informal gathering ... but more importantly it holds within it the rainwatering sump for the whole complex. The rainwater is collected through downtake pipes of the various levels of terraces. The water is then pumped up to the overhead tank and is used for flushing and other maintenance activities like landscaping etc. The water collected is directly proportional to the seasonal changes in the monsoons. Thus rainwater harvesting plays an effective role in water management.

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WATER



