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THE VOICE FOR SUSTAINABILITY

A Design in totality

Breaking new ground with radical re-think of Institutional architecture in India, this engineering college is devised as a contemporary 'educational village' consisting of distinct faculty blocks connected by an interior promenade with spaces for student learning activities. Protected from the elements with an oversized roof and a porous skin, the building uses natural light and ventilation to conserve energy


The glass facade at Principal's Cabin

Vidyalankar Institute of Technology, India

The institution has various groupings of similar requirements in clearly definable structures with a main street as the central organizing device as well as hospitable site for spontaneous student interactions. This complex of open public spaces, enclosed semi public spaces and private areas has the spatial connectivity of open plan interiors encouraging egalitarian, communal learning experience.

The designers worked on a concept of walking through asymmetric spaces to provide an escape from orthogonal rigidity. Overhanging structures which defy gravity were incorporated. Neo-baroque forms, voluptuous curves and a continuum of mutating spaces were conceptually built in. The building's public face is a deceptively quiet, porous polycarbonate skin evoking the metaphor of its industrial neighborhood. This understated gift-wrapping subtly conceals the avant-garde, playful forms inside. The skin is engineered to ease glare and yet allow the building to be naturally aerated.

• Cont. on Page 4

Inside this issue:

• From Page 1

Architecturally Organising the Institute

Vidyalankar's Technology Institute has various groupings of similar requirements in clearly definable structures with a main 'Learning Street' as the central organising device.

Each programming requirement such as administration, library, several engineering faculties, canteen etc. are individual blocks situated on either side of the inner street. Each such block functions as a self contained facility with its own faculty, library, learning spaces and connected at various levels with adjacent structures. This street at six feet above ground level sits on a basement containing laboratories, a shared resource between different faculty blocks. Staircases in cutouts on the street lead to the basement below. The building container opens with forty foot wide main entrance and a smaller subsidiary opening to the road outside with no barriers for unrestricted entry.

Tucked in the alcoves between the blocks are a man sized chess-board, a table tennis court, half a basketball court, a street side café with the canteen block, couple of phone-booths, a book kiosk and a graffiti wall, student work display areas, and a suspended amphitheatre. The act of appropriation of these public spaces by the students becomes a source of cultural energy.

Clusters of classrooms with student interaction zones typify as 'Learning Suites'. Each asymmetrical classroom provides the opportunity to introduce soft seating and teaming zones. Many classrooms have 'Spill-out Balconies' that open into the inner street. Wherever required, flexibility to combine two classrooms to form one large space has been provided. Each such learning space has two side windows for natural light and ventilation.

An oversized roof, raised fourteen feet above terrace level shields the inside from inclement weather, while allowing hot air to escape from the sides. Thermal reduction coating on multi-wall polycarbonate panels ensures abundant natural light minus the corresponding heat load. Use of recycled materials such as packing material obtained from shipping containers and reengineered sleeper wood from railway tracks in raw form intensify the sense of space.

Construction materials used for the project include: Cement, concrete, bricks, structural steel (Steel bars, M.S. Sections), steel cables, Galvanised corrugated sheet, Rough finish Vitrified paver tile, multi- wall polycarbonate sheets, plywood, veneer, chip board, sleeper wood, glass and acrylic emulsion paint.

Salient Characteristics of the Institute

Art, Music & Performance

The introduction of a suspended amphitheatre at end of the learning street is an invitation to the students to participate in plays, play musical instruments or even practice oratory. The stepped seating accommodates a small group of students. The stage area has been designed to have temporary backdrops that allow flexibility in orientation of the performer. From the street end, the stage becomes an elevated performance dais. This facilitates a larger group of students to enjoy the events. In a sense, the entire street can be occupied by a large audience. The skybridges, spillout areas and passageways lining the street at 202 and above can be additional balconies to view performances.

Connecting to the Community

It is a building that has been designed to be porous. No gates or barriers to keep out the surrounding community. In the second phase, an auditorium will service the needs of the institution and the community alike. The entrance to the auditorium has been deliberately provided from the roadside and not from inside the college. The institution believes that the auditorium would be more frequently used by the people and organisations from outside the institution. It has the potential of becoming a local community anchor.

Daylight and Solar Energy

Daylight, which is a very vital component of a day-learning centre, can be introduced in to school buildings in many ways — including windows, skylights and light shelves. Sometimes, entire outside walls can disappear through the use of overhead doors and moveable panels so that daylight can wash into interior spaces. One of the key design criteria was to maximise natural light and ventilation. Each classroom has been designed to have windows on two sides. One of these sides is usually the outside of the building. In all months of the year, natural light has been found to be sufficient to conduct learning programs. Additional electric lighting supports late evening and night needs.

Indoor & Outdoor Connection

The institutional structure is part of the larger campus outside. Designed to obliterate the conventional clear distinction between inside and outside, it has a porous, open character. By introduction of outdoor plants inside, it would take the concept further. The act of walking down the learning street is one of observing built form of individual units interspersed with 40 feet x 40 feet vistas of outside. A lot of the individual rooms have view of both inside as well as outside.

Natural Ventilation

This building is almost entirely naturally ventilated. The large openings between individual units ensure that the connecting street benefits from the south-west wind direction in Mumbai. The cross ventilation of the street happens through the asymmetrically staggered openings on the opposite end. By raising the roof 14 feet above the terrace level, any hot air inside the street cavity is allowed to escape through stack effect. Electric ceiling fans inside classrooms help maintain comfort in summer months. Due to the sensitive nature of the equipment inside, the computer center and a few individual rooms have been air-conditioned.

Sustainable Elements

The building maximizes the advantages of natural light and ventilation. It does not require electrical lighting or air conditioning to function during normal conditions. The materials used in construction are locally available and are cost effective. The finishes and claddings are resilient and require low maintenance. Few are of recycled origin.

Welcoming Entry

The height of the building has been designed to relate to human scale. The proposed multi-wall polycarbonate fins that clad the building, evokes the feeling of its industrial neighbourhood. Large punctures connect inside with the outside. Two of the largest punctures, as the architect would like to call them, are entrances. There are no gates; the learning street is simply a pedestrian extension to the road outside. The security aspect is taken care by the general screening that happens for people entering the larger outside campus. RnF

PROJECT CREDITS:

Architect, Planner, Consultant: Planet 3 Studios Architecture Pvt. Ltd.

Client: The Vidyalankar educational trust, Wadala-Mumbai

Design team: Kalhan Mattoo, Santha Gour Mattoo, assisted by Jainish Jani

Size of the project: 1, 95,000 sqft.

Cost of project: Rs. 16 Crores.(USD 4000000)

Year of completion: 2006

Civil Contractor: Nagarjuna Constructions

Structural consultant: S.N. Bhobe & Associates

Services consultants: Sunil Services

Electrical and plumbing consultant: Synergy

Civil Finish: Nagarjuna Constructions

Roofing System: Galvanised corrugated sheet roofing system

Learning Street's Interactive Design

Views of canteen block

Wrapped walls