

CONSTRUCTION INFRASTRUCTURE ARCHITECT WORLD

CRAFTING THE CONSTRUCTION INDUSTRY IN WORDS



“MY VISION FOR GUJARAT IS ‘TO AVAIL TOMORROW’S TECHNOLOGIES TODAY’ FOR THE WELFARE OF CITIZENS”

Anandiben Patel holds the distinction of being the only woman MLA to have won four consecutive elections in Gujarat, from three different constituencies before becoming the Honorable Chief Minister of Gujarat

ALUPLEX

ALUPLEX: The Leader in Façade Engineering

“Our vision is to be the Worldwide Leader in the Installation of the Finest Quality Curtain Walls and Façade Systems”, says **NAVIN KESWANI**, the Pioneer of the Indian Façade Industry who has been awarded the President’s Udyog Rattan Award in 1985

TATA STEEL

The Future of Art

The Swami Vivekananda International Airport (SVIA) at Raipur, Chhattisgarh, is an aesthetic marvel that uses sophisticated aero dynamic steel structures to bring alive an exceptional design. The precise sculpting of steel for this terminal was made possible by the superior ductile strength of Tata Structura hollow sections.

We are proud that SVIA has won the Best Airport of India Award from the Ministry of Tourism, Govt. of India.



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Director, Expomark



VIJAY KALANTRI,
CMD, Balaji Infra Projects Ltd & Dighi Port Ltd



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Director, HIRCO Project Companies





About the Architects



Principal architect
Gurpreet S Shah



Principal architect
Charanjit S Shah

Founding Principal **Prof. Charanjit S Shah** and Principal architect **Gurpreet S Shah**, are two pillars of strength at Creative Group. Prof. Charanjit Shah, leads the Creative Group team. A multifaceted personality with vast experience as the chief designer for infrastructure, institutional, industrial and recreational projects besides corporate interiors, etc. Prof. Charanjit S Shah established Creative Group with a sincere approach towards Green Architecture in India .

RAIPUR AIRPORT

→ With the recently inaugurated airports at Raipur, India is no longer lagging behind as airport architecture in the country has taken a great leap forward. Cumbersome travel experiences through various security processes, and dreary arrival halls are a thing of the past. Transparent terminals with inspiring architecture, set in a larger than life structural canvas make for a "grand welcome" for the travellers. A definite movement pattern, clear segrega-

tion of spaces and short travel distances are any travellers delight when alighting from the terminals at Raipur. Such efficiency in planning of spaces inspires a sense of good will in the commuters, says architect Gurpreet S. Shah.

Named as the Swami Vivekananda airport, the terminal currently, is in a position to accommodate 8,17,600 domestic and international passengers. Segregating the arrival and departing spaces, the new bi-level terminal



REDEFINING

ARCHITECTURE THROUGH SUSTAINABILITY



By **D K Das**
Head Business
Development,
Tata Structura

TATA STRUCTURA
-HOLLOW STRUCTURAL
SECTIONS HAVE
SEVERAL DISTINCT
ADVANTAGES:
**Engineering
Advantages**

- Greater design properties in both axis (moment of inertia, section modulus and radius of gyration)
- High resistance to torsional loading
- Particularly suited for compression column applications

- Higher Strength/Weight Ratio
- Diversity: strength, formability, toughness and corrosion resistance
- Less resistance to Air Flow.

**Architectural/Design
Advantages**

- High quality surface finish
- Appearance in exposed applications can become an exciting and visual part of the design of buildings and other structures
- Cost effective in relation to other building materials
- Ability to conceal essential services

**Fabricator/Contractor
Advantages**

- Easier, faster and cheaper to paint or coat
- Easier to weld in both the shop and field (due to restricted chemistries) no preheating or post-heating is required
- Reduced weight means additional savings

- in erection and shipping costs
- Ease of Fabrication

In summary, Structural Hollow Sections have an entire plethora of uses in architectural, infrastructural, industrial and general engineering applications and looks to be one of the key proponents of the sustainable world of tomorrow in India and beyond

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with an area of 18,500 sq.m houses two hardstand holdrooms and gates. However, the proposed expansion plan shall facilitate an area of 25,000 sq.m and four gates catering to the future expanding needs by 2015/16 the space frame.

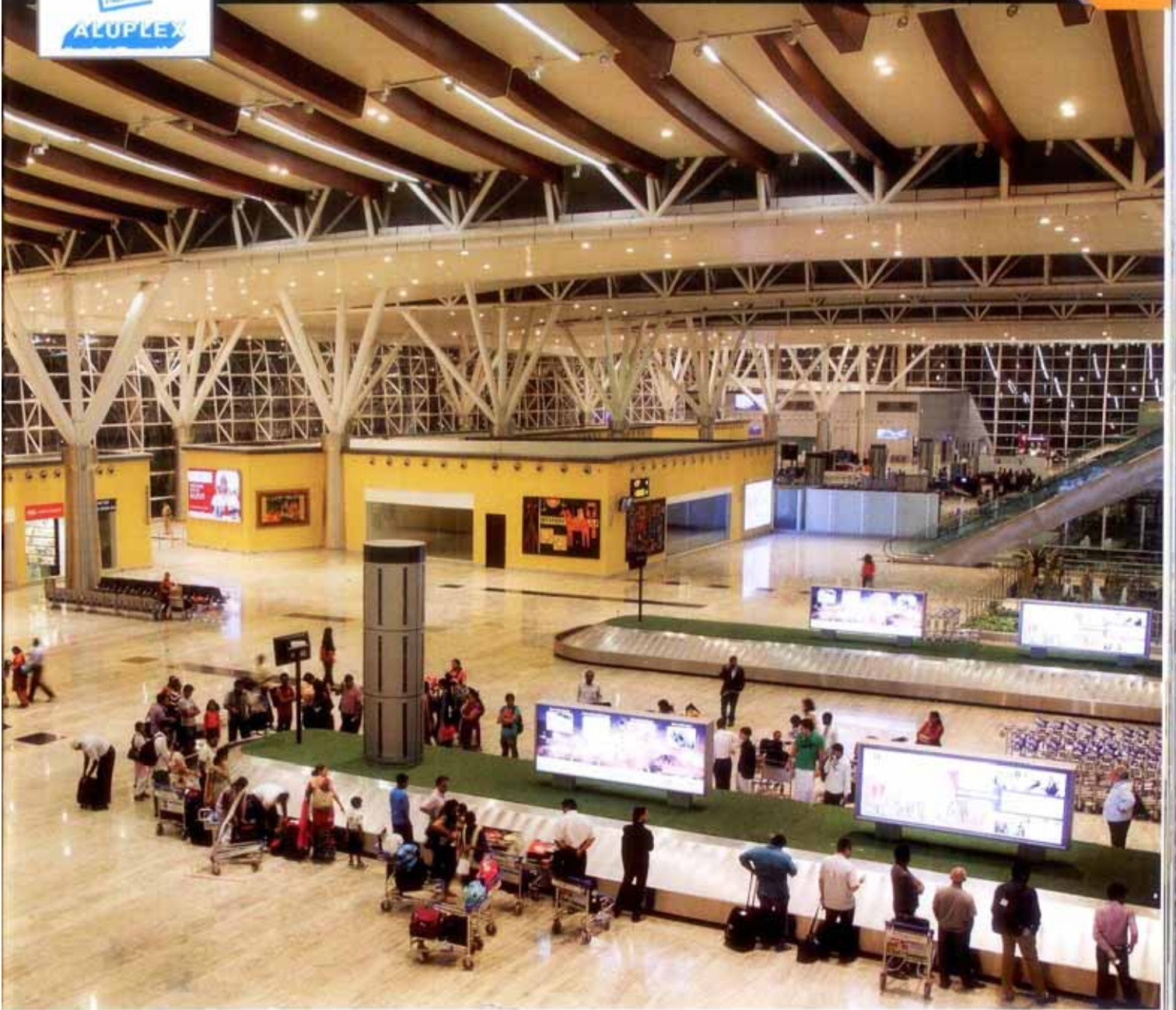
The terminal boasting state-of-the-art technology has 20 check-in counters, 3 escalators, 3 lift, 2 X-ray luggage machines, 3 security check points and 3 conveyor belts for luggage. It also has a provision on 15 immigration counters for prospective international flights. The city side development includes elaborates plans for areas specifically dedicated to a surface car park for 350 cars, 150 taxis, 10 buses, 10 V.I.P, at a distance of 100m from the terminal.

The Free flowing 'AVIAN'

→ The integrated terminal is an elegant modern structure defined by a high-tech aerodynamic building offering a smooth transition to its passengers from the flight to the city. Its organic form deriving its genesis from an "Avian" is conceived with a sliced dome at the centre and multiple wings elevating the roof profile towards the sky. The slicing of the roof profile maximizes the daylight, while emitting light in the sky making it visible at night. The design of the terminal building, liaise emphasis on the vastness of spaces, the visual experience of the sky and the subtle landing on the ground with the terminal building as catalyst integrating all three. The internal planning of the terminal has resulted into an efficient organization of passenger circulation and security enhances the vibrancy of the spaces.

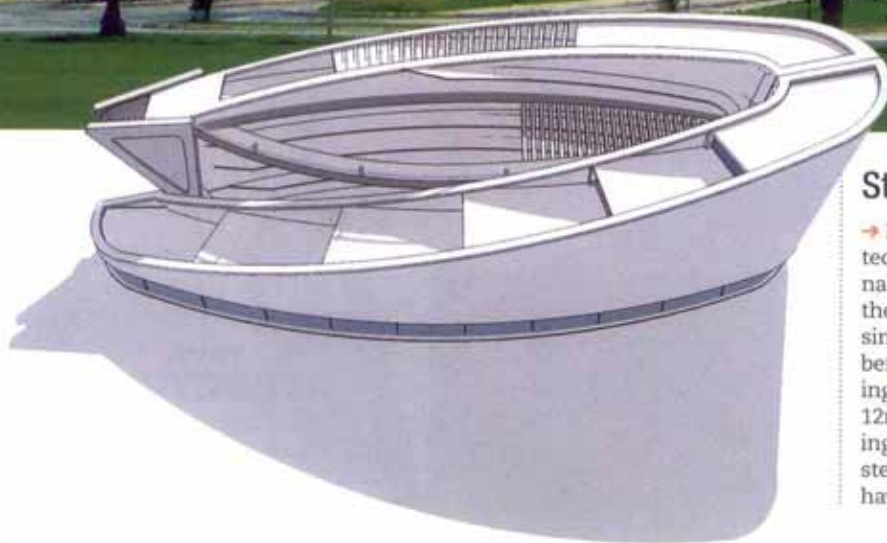


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→ The colossal structural roof is a result of the strenuous task requiring the design and assimilation of more than 14,500 tubular members. The curvilinear roof spanning 120m, boasting a maximum clear span of 39m flanking a 12m cantilever at airside creates a unique floating effect.



Structure

→ Novelty in structural design along engineering technology sculpted the iconic roof of the terminal. The colossal structural roof is a result of the strenuous task requiring the design and assimilation of more than 14,500 tubular members. The curvilinear roof spanning 120m, boasting a maximum clear span of 39m flanking a 12m cantilever at airside creates a unique floating effect. Each primary truss is supported by steel columns with flaring arms on each end having gained the name of "Tree Columns".



The structural roof is segmented at equal intervals to form skylights, allowing natural light in abundance. Lighting is a key element of the terminal design. As natural light beautifully floods the interiors spaces during the day, the lighting at night is equally charming.



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Steel – Sculpting Design

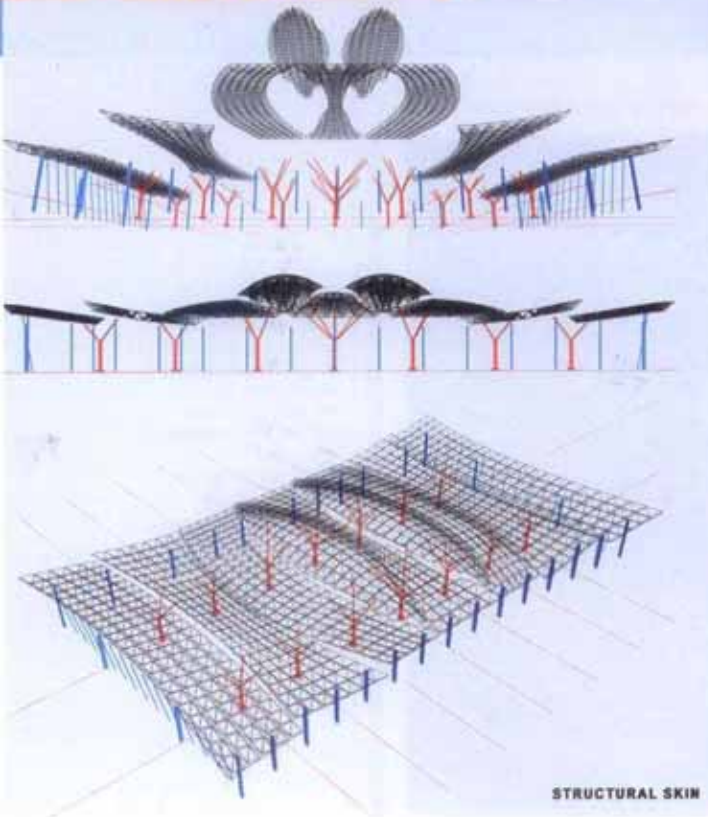
→ "Steel transforms surreal 3 Dimensional curvilinear roofs into reality"
The strength of steel has been utilized to cre-

ate an intricate avant-garde design. The flexibility of steel enables to create a large open span structure with limited columns. Surreal form of the building was realized by the malleable nature of steel, making it possible to construct the exact computer engineered design.

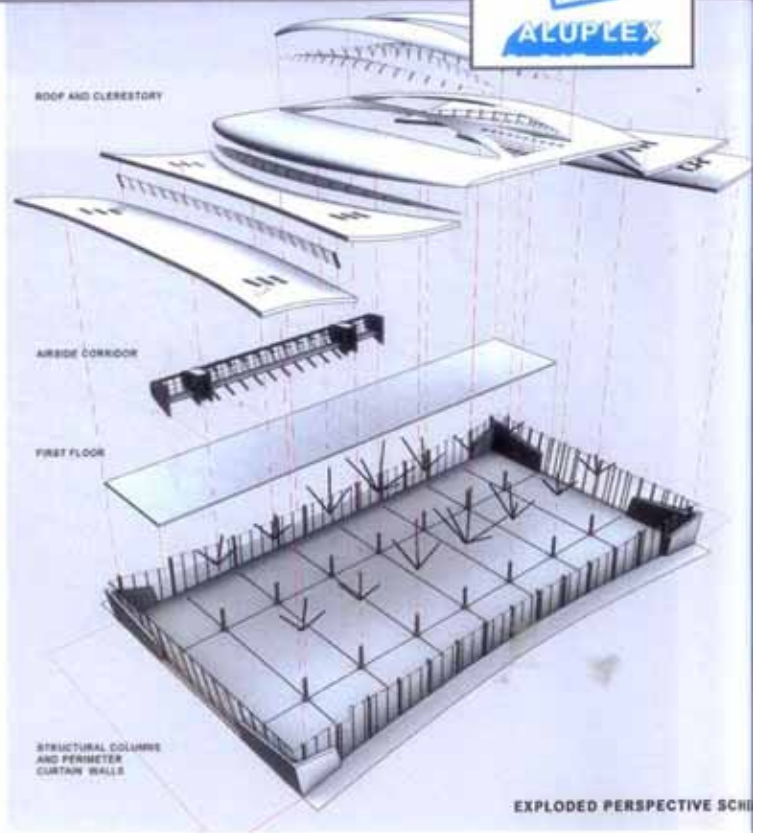
Sustainability

→ Pioneer in designing sustainable airports, the architects have carefully planned and implemented various active and passive green measures, making use





STRUCTURAL SKIN



EXPLODED PERSPECTIVE SCHEMATIC

A high thermal mass structure, with highly insulated walls and roof, ensure the building is further cooled down and shaded with trees. A double insulating glass unit, provided on the South-West, south-East and north-East not only ensures an insulated envelope but also preventing air leakages in the building.

of the best available resources. Retention of storm water and rain water harvesting recharges ground water, to ensure judicious and energy efficient functioning of the terminal.

A high thermal mass structure, with highly insulated walls and roof, ensure the building is further cooled down and shaded with trees. A double insulating glass unit, provided on the South-West, south-East and north-East not only ensures an insulated envelope but also preventing air leakages in the building. A natural glare free light is emitted on the South-East and South-West facades. Provision of overhangs, roof projections and fins prohibit sun





and glare penetration into the building. The "Green Ground Parking" uses grass track pavers for car park area facilitating ground water recharge and reducing heat Island Effect creates a pleasant micro climate around the terminal building city side.

Courtyard Landscaped with Native Tribal Art

→ Reviving the local traditional art, the sunken landscaped court encompassing a central garden forms an exceptionally delightful feature of the terminal structure. Adorned with an array of historic Bastar art sculptures, the age old regional art of Chhattisgarh was patronized, lending a sense of pride and individuality to the terminal. Visible from the mezzanine and security check areas, the courtyard serves to segregate the security areas and the hold spaces.

This concept stems from the desire to augment the visual experience with refreshing areas and exclusivity. At the ground level, the courtyards are sunk and with a Curvilinear stream flowing from east to west through a patchwork of lush, colorful perennials. Vertical gardens and lush palm groves rise from this



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patchwork, delivering a diverse visual palette of flowering perennials and foliage to passengers. This courtyard creates an intimate symbolic relationship with the terminal's form, delivering an enriching experience for the passengers, visitors, and employees.

Food Court, Raipur Airport

→ *"Tranquility descends as one glances over the nature engulfed food court"*

On striding along the lush green lawns, travellers are awe-struck by the flamboyant and resplendent form of the food court. A beautiful amalgamation of a built-form in harmony with the nature around, the building succeeds to charm and rejuvenate the arriving and departing passengers. Rising from the abundant flourishing landscape, the recreational food court stands in the heart of the Raipur cityside development.

When visualizing the building, the architects dreamt to create an ambience of tranquillity, peace and relaxation. A decision was taken to envelope the building structure using a tensile membrane. Forming the first node of introduction to the busy terminal building, the food court becomes a focal hub of recreation and relaxation. True to its in-

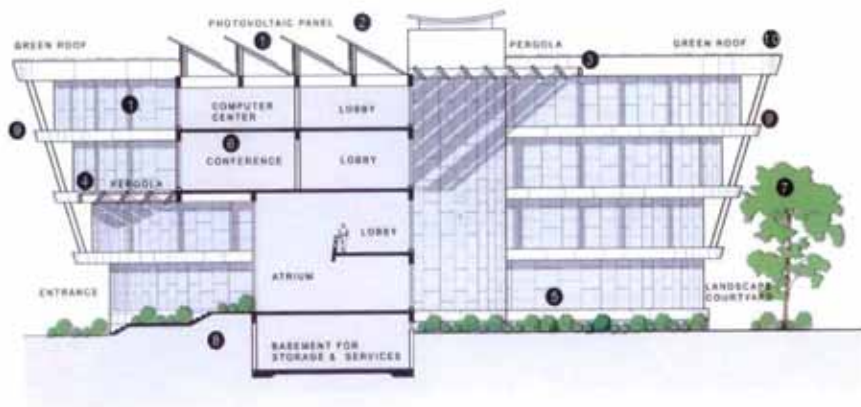
tent, the building lends a breath of freshness to passengers and visitors alike, wanting to break away from the hustle-bustle of the terminal building. Its organic form and fluidity impart the structure with uniqueness and individuality, while yet managing to congregate as a part of the environment corresponding to the terminal building. The building is conveniently sited between the landscaped development at city side, to be accessible to both, the flyers and non-flyers.

Inspired by the very design of the terminal, a common area has been designed complimenting the needs and requirements of the commuters. This standalone double-storied food court development covers an approximate area of 400 square meters and provides a picturesque view of the terminal while adding vibrancy to the city side landscape.

The ground floor is air conditioned with the partial outside seating, circumscribed by the water pool and fountains to comfort the visitor from the arid climate of Raipur. The terrace, covered with floating tensile structure provides a naturally cooled covered space. The food court grants a panoramic view of the city side landscape and aircraft movement at the same time.

The architectural form of the food court and

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CROSS SECTION (A)

ENERGY EFFICIENT ENVIRONMENTAL FRIENDLY CONCEPT

1. Maximizing controlled daylight (windows and skylight).
2. Photovoltaic cells on Atrium roof reduce heat gain and provide renewable power.
3. Pergola at the west façade with photo voltaic cells reduce heat gain and provide renewable power.
4. Pergola to shade & define Entrance.
5. Water efficient landscaping with native plants.
6. Low Volatile Organic Compound (VOC) emitting materials such as adhesives, carpets and paints.
7. Shaded trees along West façade reduce heat gain, roof projection along West, South, East facade reduce heat gain
8. Use of Concrete with high-volumes fly ash (a recycled industrial by-product)
9. Angular Projections to cut summer sun.
10. Roof Garden for Thermal insulation.

PROPOSED CONSTRUCTION OF OFFICE BUILDING OF HPGCL AT PANCHKULA

CREATIVE GROUP

M - 59, SAKET, NEW DELHI - 110017,
TEL : 29861478, 29862571, FAX : 41765388

material selection is kept light weight to subdue the structure in front of the terminal building. Inspired from a butterfly sitting on a grass land, the tensile canopy supported by two crescent shaped steel tubes with flaring wings extend to the structural cables ensuring lateral support.

HPGCL, PANCHKULA

→ "In-Built Sustainability"

The project is designed to portray a modern IT-enabled, energy efficient and environment-friendly, state-of-the art, functional building. The site is located in a corporate zone surrounded by impressive bold structures. To break the monotony, the architects have attempted tilting the built mass at an angle of 45 degrees to increase the visibility of the building. At the same time, the building has a minimal footprint at the ground level to maximise area for landscaping. The FAR has been completely utilised by increasing the floor plate area as the building rises.

The projections keep a check on the penetration of the harsh solar sun on the southern face of the building as well. A narrow floor plate of 12m width is used to maximise daylight. The meticulously planned floor plates ensure that the maximum floor area avails of the natural light with a minimal dependence on artificial source of light in the daytime.

A combination of features like special grade of glass, metal louvers and the adequately positioned overhangs check the solar glare and the heat intake in the building. Moreover, the pergolas used on the building exterior serve as an add-on for the elevation of the building. The heat island effect has also been curbed by in-

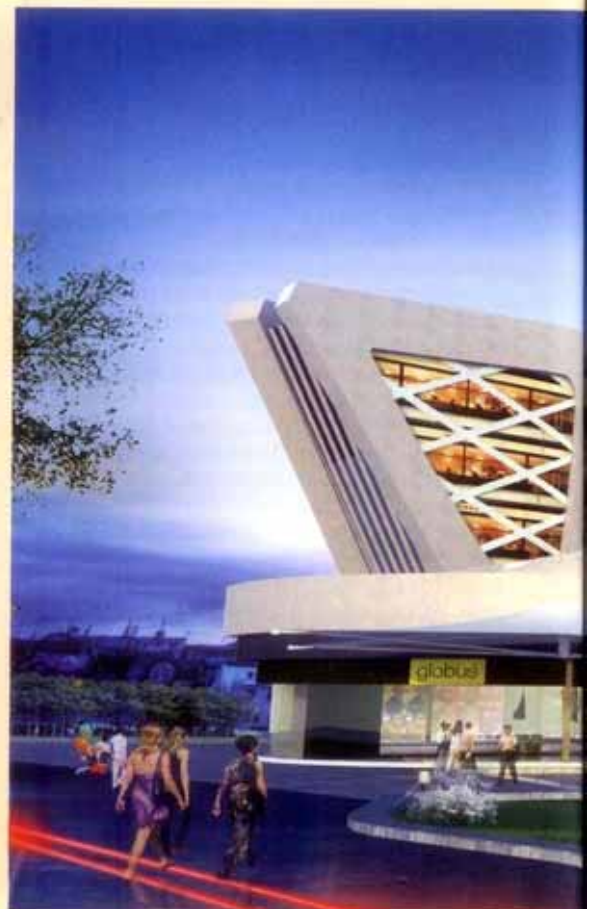
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stalling heavy plantation on the south, west and south-western sides of the site. There are terrace gardens proposed on the upper level floors which offer thermal insulation to the roof.

COMMERCIAL COMPLEX, NAYA RAIPUR

- "Highest point of building at South-West protects the building from harsh summer sun"
- "Metal Jaali and hoardings act as 2nd layer of sunscreen"

The commercial built-form has a dynamic complex so that the building facade changes at every viewing angle. The helical form of the building emerges from the ground floor, as if originating from the surrounding landscape. The design creates open spaces and terraces with the view of providing maximum commer-

cial viability. Food and beverages are provided on the ground -floor. Shaded courtyards in the centre create recreational relaxing spaces.

ABOUT THE FIRM

→ Creative Group, established in 1973, has a history of Professional practice as Architectural Consultants for more than four decades. The firm is structured to provide a broad base in Architecture, Planning, Urban Design, Structural Design, Interiors and Project Management.

The Creative Group team has qualified professionals with diverse experience covering all major aspects of the planning and design process. Our ability to deliver highly sustainable and viable contemporary built-forms is enhanced by our capability to engage ourselves right from the initial phase of the project. **GA**



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