Facade Design - An aesthetic envelope, or a harmonious response to nature.

Facade – As an aesthetic envelope
The Guggenheim Museum - Bilbao

Louis Vuitton Foundation - Paris
National Centre for the Performing Arts - Beijing

Sustainable Facades – Resulting in Classical Facades
Facade – Green for green’s sake
Sustainable Facades - Creating Iconic Structures
Facade – As a response to nature – Design Solution and Methodology

Case Study – TCS Synergy Park
Conceiving building forms and their Orientation considering climatology and site constraints...

12m – Height of existing trees at site
Services core located along the southern façade thus screening off the occupied areas located along the Northern façade from the harsh southern heat.

Services core dissociated from the occupied areas thereby creating an atrium... an air pocket that further cuts southern-heat penetration into occupied areas.
Upper floor plates moved outwards along the north to further cut off the direct sun rays from entering occupied areas located along the northern façade of the blocks.

The inclined façade makes the glass behave like a mirror for the steep sun rays incident on the northern façade.

The roof wraps around the occupied areas formalizing the atrium and reducing the total surface area exposed to direct sunlight!

The white coat over the membrane waterproofing further helps reflect heat.
North Façade... has the maximum glazing
The building has an exceptional glare free light that percolates into a substantial portion of the office space and hence artificial light is kept to a minimum along the central strip of the floor plate. This quality of light combined with reduced heat results in substantially lesser power consumption.
A catchment reservoir / mini lake was designed in the low lying area of the site. The harvested rain water was planned to be used for the water cooled system and for irrigation as well. Its perimeter was designed with informal sit-outs that doubled up as ideation spaces, and formed a vital landscape element with work areas overlooking the space.
ZONE-2. The site comes in Zone-2 of the Super Corridor Masterplan. Total area of Zone-2 is 41.14 hectare.

This Piazza near Infosys will act as a node for employees and visitors.

The Site

Location - Indore
Plot Area - 130 acres
Overall development BUA - 45,00,000 sq. ft.
Utility - Software Campus
Completion Date - Ongoing

Land allotted for IT Companies is shown as vacant. Rest of the plots are for residential and commercial development.

Infosys Campus along Super Corridor:

Location - Indore
Plot Area - 130 acres
Overall development BUA - 45,00,000 sq. ft.
Utility - Software Campus
Completion Date - Ongoing

INFOSYS

MEDICAL HUB

RESIDENTIAL DEVELOPMENT

MIXED USE DEVELOPMENT

SPORTS COMPLEX

TCS
KEY CLIMATIC DATA COLLECTION THAT SHAPED THE MASTER-PLAN AND THE BUILDING DESIGN

Climatic Study

- Natural Ventilation – 24%
- Fans - 40%
- Evaporative Cooling – 44%
- Evaporative Cooling + Fans – 69%
High Diurnal Temperature Difference

- Good potential for Night Cooling with Thermal Mass
- Stored water and thermal mass could be used as heat sinks in the day which would cool naturally at night

![Diurnal Temperature Range Graph](image)

**Zone Establishment: Irradiation & Wind flow Study**

- Irradiation: The sun's rays are directed towards the site, affecting the temperature and cooling potential.
- Wind flow: The direction and speed of the wind are crucial for natural ventilation and cooling.

- Stored water can be used as a heat sink, absorbing heat during the day and releasing it slowly at night.
- The layout of buildings and the use of vegetation can enhance the natural cooling effect.

In the diagram, shaded areas represent the location of water bodies, while the rate of evaporation will be low due to shading from nearby buildings.
Master Plan Layout:
Buildings to be Developed for all Phases
1. SDB-1-18
2. Food Court-1-4
3. MLCF-1
4. Utility Area
5. ECC
6. Open Parking
7. Security-1
8. Security-2
9. Lakes

SHAPING THE BUILDING DESIGN WITH A SUSTAINABLE APPROACH
Ariel View:

View of Software Development Block:
Comparison of Environmental Aspects – Option 1 & 2

**OPTION 1**

- 60% PLOT TO HAVE TREE CANOPY COVER (INCLUDING ROADS AND WALKWAYS)
- 33% PLOT TO HAVE MASS TREE PLANTATIONS
- CLEARLY DEMARCATED MINIMAL VEHICULAR MOVEMENT, MAXIMUM PEDESTRIAN FRIENDLY MOVEMENT.
- SEEMLESS INTEGRATION OF GREENS WITH THE BUILT FORMS
- INTERGRATED PHASEWISE DEVELOPMENT SUCH THAT CAMPUS LOOKS COMPLETE AT ANY POINT IN TIME.

**OPTION 2**

Comparison of Environmental Aspects – Annual Fabric Gains

OPTION 1 HAS 40% MORE FABRIC GAINS COMPARED TO OPTION 2
Comparison of Environmental Aspects – Shading Requirement

Facades that require extensive shading:

Option 1:

The requirement for shading is lesser in Option 2 compared to Option 1.

Option 2:

Comparison of Environmental Aspects – Option 1 Shading Options

The heavy shading will compromise daylighting to an extent.
Hence Option-2 was selected.

DAY LIGHT STUDY
TARGET - 80% OF THE FLOOR PLATE TO BE NATURALLY LIT
Floor Plate Profile Analysis

*Interior Concept Test Fits. Typical Floor Option-1:

- WING A
  - BUA = 92480
  - 20/49.32 SQ.FT
  - OCCUPANCY = 284 PEOPLE
  - 100.2 SQ.FT/PERSON

- WING B
  - BUA = 92400
  - 20/49.32 SQ.FT
  - OCCUPANCY = 284 PEOPLE
  - 100.2 SQ.FT/PERSON
FAÇADE SHADING STRATEGY

Planitherm Mint Green

1100mm lightshelf
300mm internal lightshelf

ALL NE SECTION

SKN 444

ALL SW SECTION

Midpane Reflective Louvers
6mm clear glass

Planitherm Mint Green

SKN 454

View Pane

Light Pane

1100mm light shelf
Dec 21st: 16.30hrs. – V1

25/04/2013

Dec 21st: 10.30hrs. – V2

25/04/2013