

MINDFUL BUILDINGS

Seeing Beyond the 'Green'

Himanshu Parikh

A GLASS BUILDING IN THE DESERT SUN !



1st Platinum Rated Green Building in the Middle East & 16th in the World.

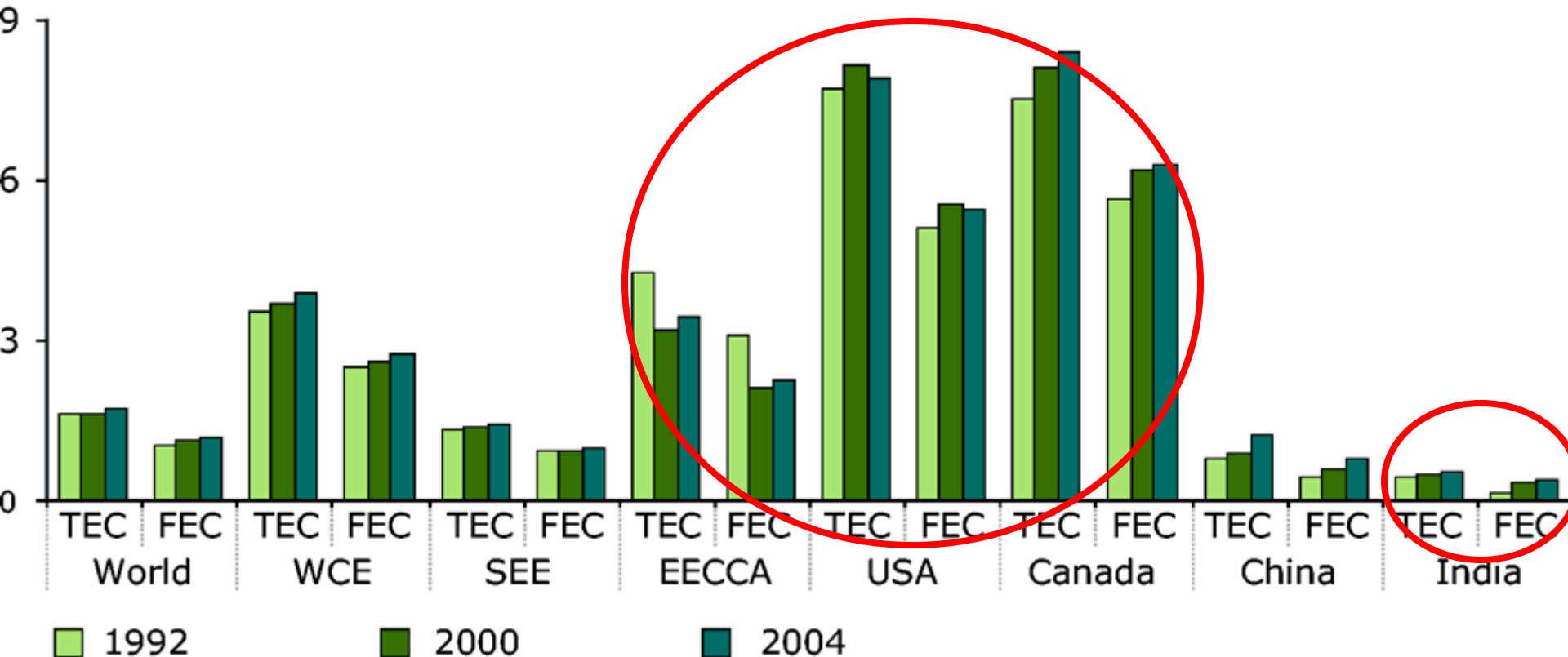
Where has common sense disappeared?

DO WE COPY OR MOVE ON?

Total energy consumption (TEC) per capita and final energy consumption (FEC) per capita

Source: European Environment Agency

Toe/capita



Can't we lead by capitalizing on our propensity to be frugal?

MINDFUL BUILDINGS

BACK TO THE BASICS

- Simplicity
 - Frugality
 - Multiplicity



SIMPLICITY

Simplicity is not boring



SIMPLICITY

LEARN TO KISS
(Keep It Simple Stupid)

Use design to convert sophistication to
simplicity without losing the magic.

Simpler the faster.

Simpler the cheaper.

Simpler the more beautiful.

FRUGALITY

Reducing Concrete –
Shells Made Simple





FRUGALITY

Reducing Steel -

There is Still a Scope Through Conceptual Thinking



DESI SPACE FRAME

VS.

ITS HI-TECH COUSIN

- Reduced diagonal ties.
- Half the shear members.
- Pyramids from cottage workshops.
- Assembled on site without staging.
- No expensive joints.
- Self aligning and curving.
- $\frac{1}{3}$ rd cost of proprietary systems.





DURING



AFTER



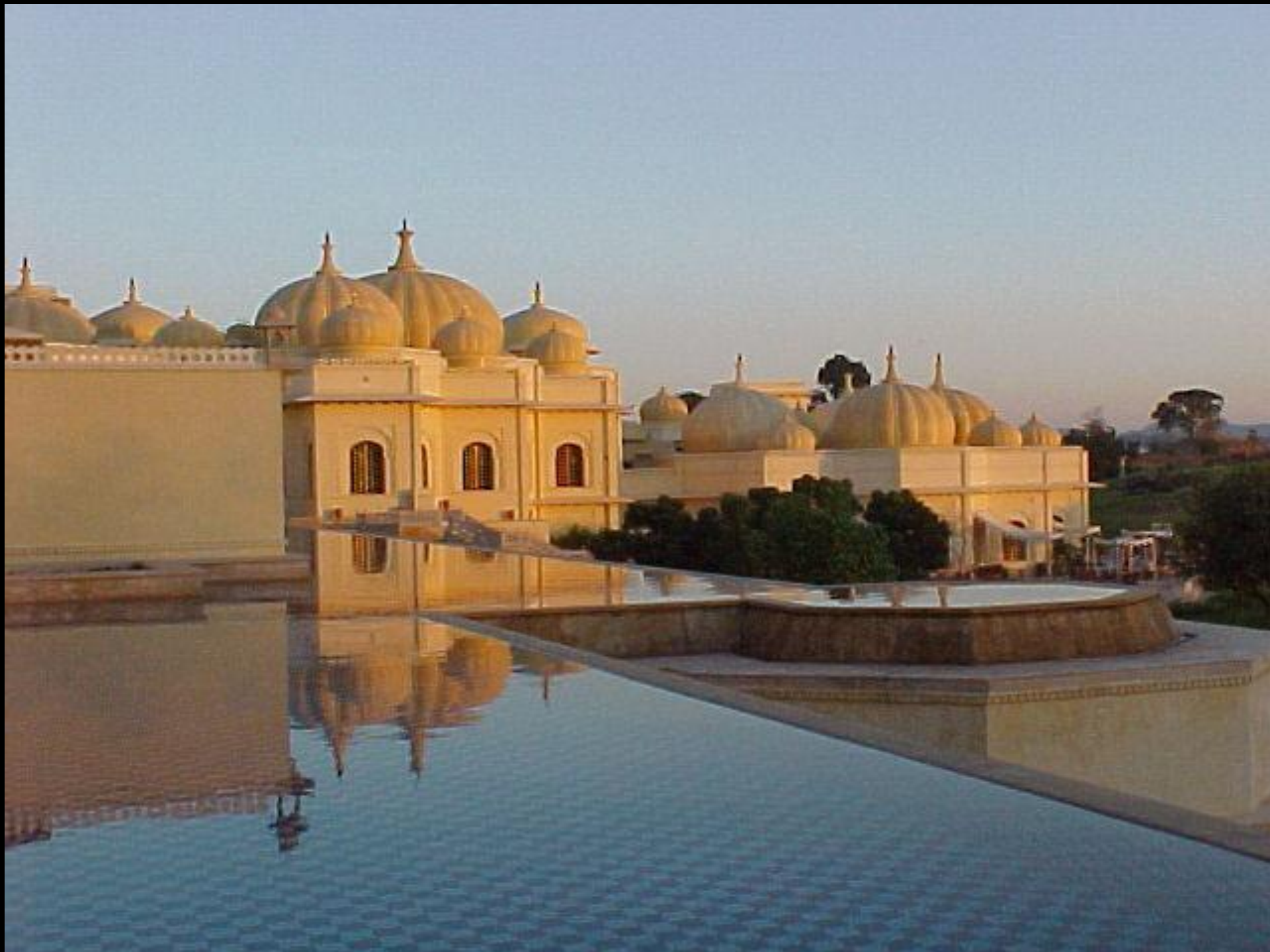
SWAMINARAYAN TEMPLE

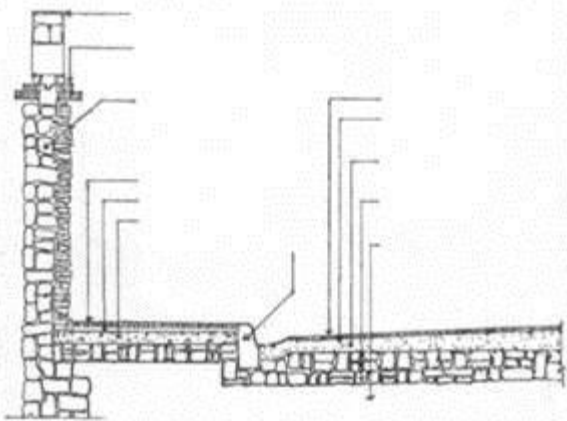
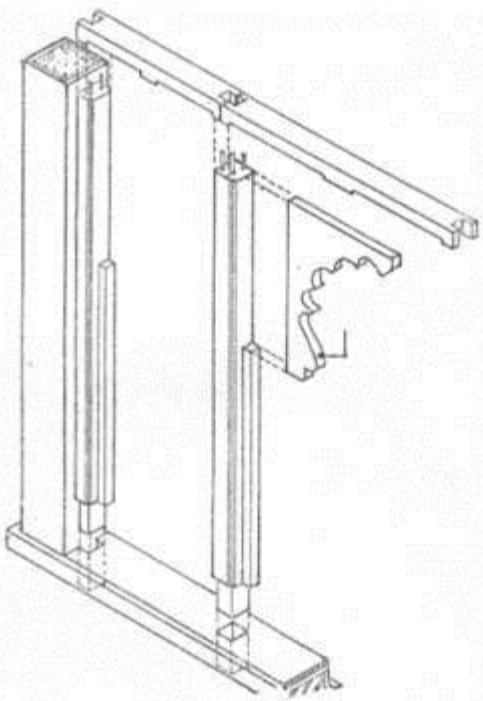
FRUGALITY

Local Materials, Skills and Responses









FRUGALITY

Appropriate Response to Earthquake

CRAFT PARK, BHUJ



Building is the nothing between boxes



Weight reducing vertically: Stone - rammed Earth - soil blocks - wattle and daub.



CRAFT PARK, BHUJ



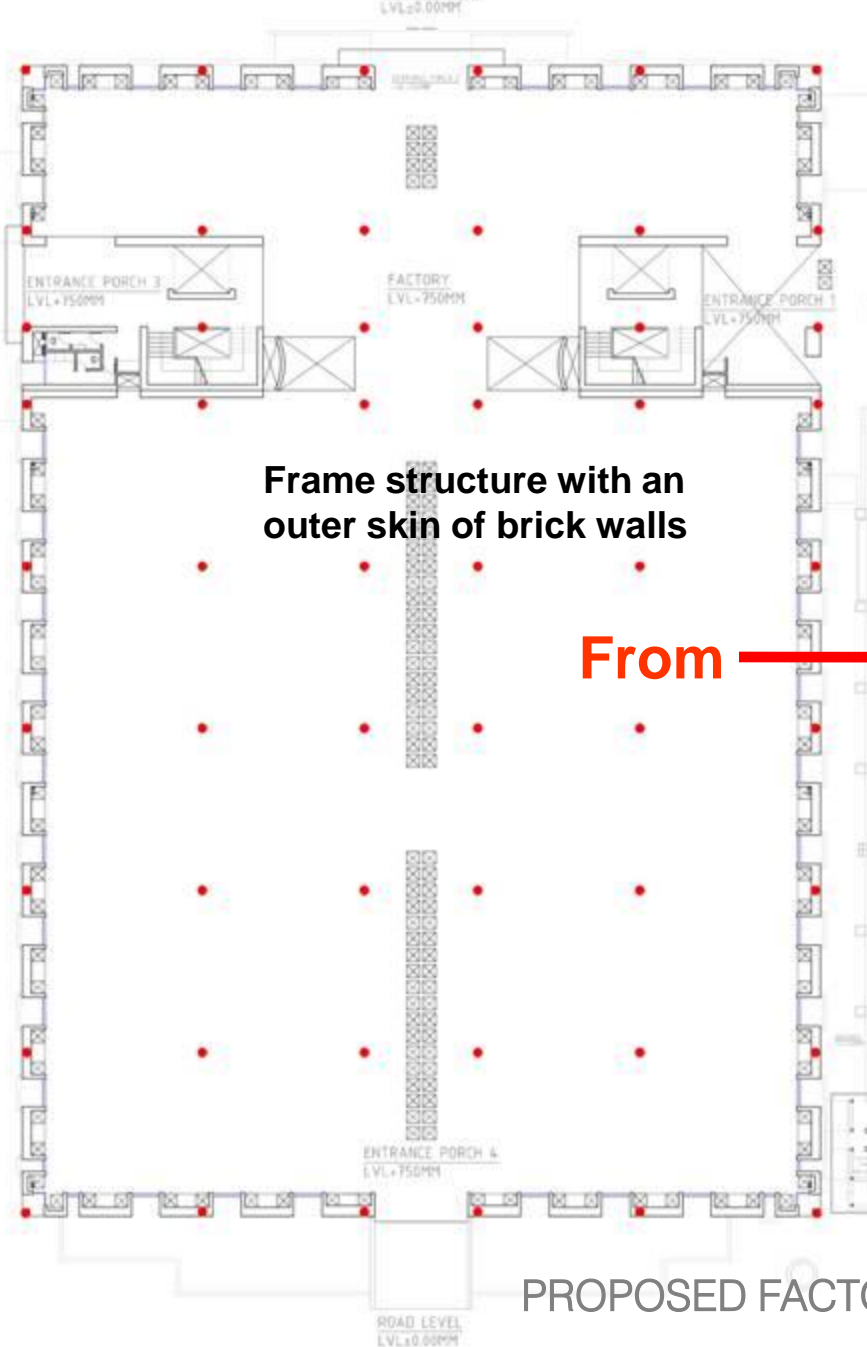
PARAG PLAYSCHOOL, AHMEDABAD



MULTIPLICITY

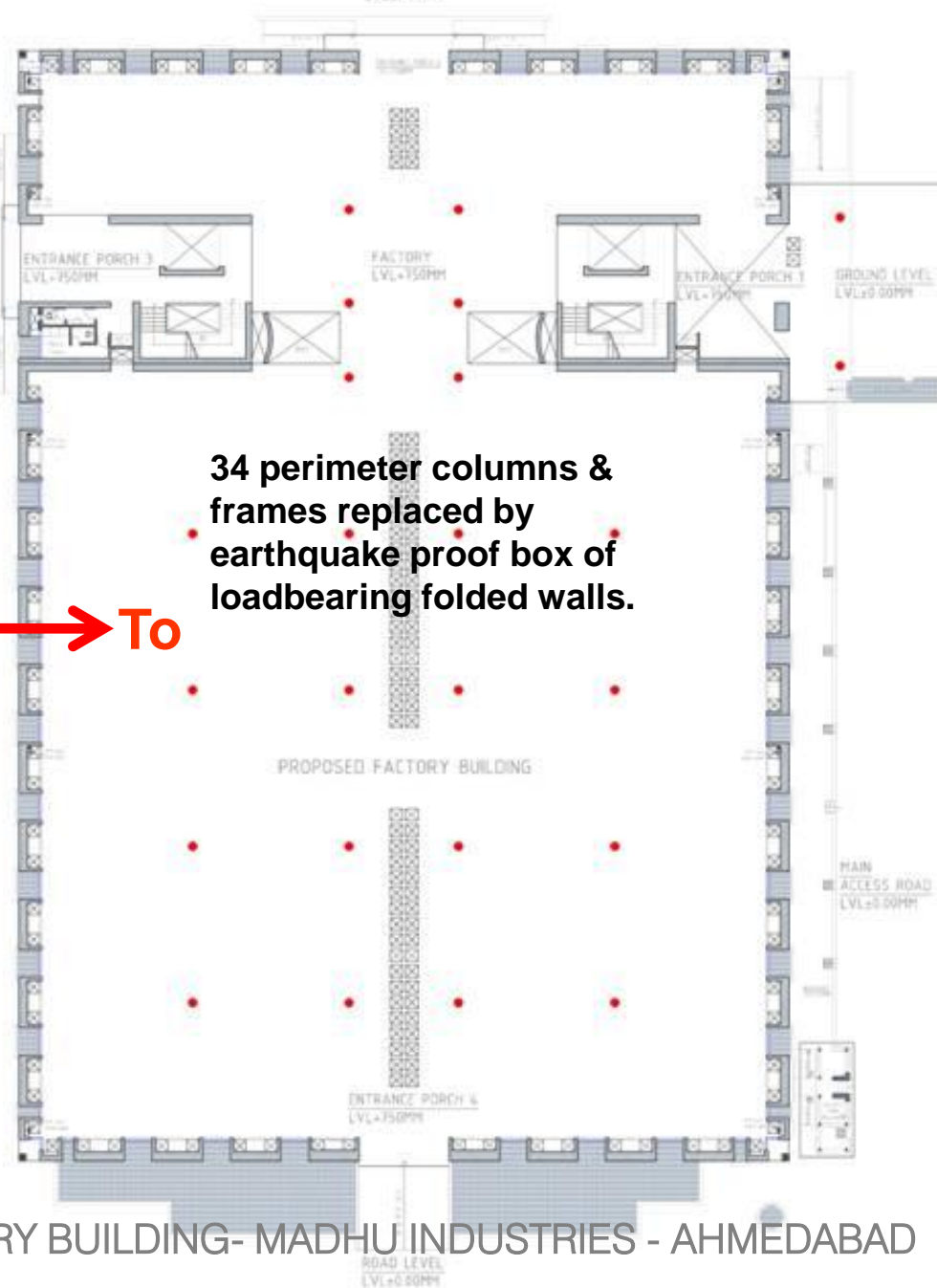
FROM FRAME TO BOX

60m X 80m 4-STOREY FACTORY WITH 11m. SPANS



Frame structure with an outer skin of brick walls

From → To



34 perimeter columns & frames replaced by earthquake proof box of loadbearing folded walls.

PROPOSED FACTORY BUILDING- MADHU INDUSTRIES - AHMEDABAD

FOLDED WALLS WITH CORNER BARS



FLYASH-POLYSTYRENE
BRICKS PEPPERED WITH
ORDINARY RED BRICKS



WALL MASS & HOLLOW SLABS FOR ECONOMY, INSULATION AND THERMAL COMFORT



THE RESULTING FAÇADE



MULTIPLICITY

INTEGRATING STRUCTURE

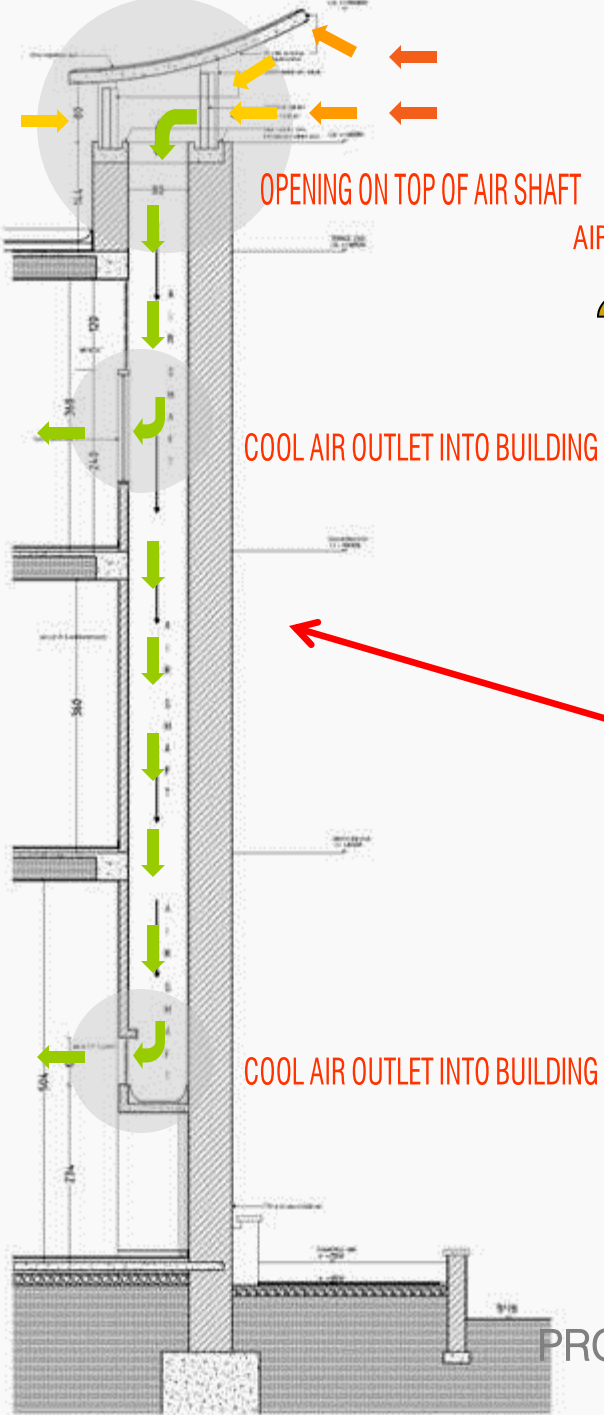
WITH

NATURAL COOLING

AND

DEEP LIGHT WASHING

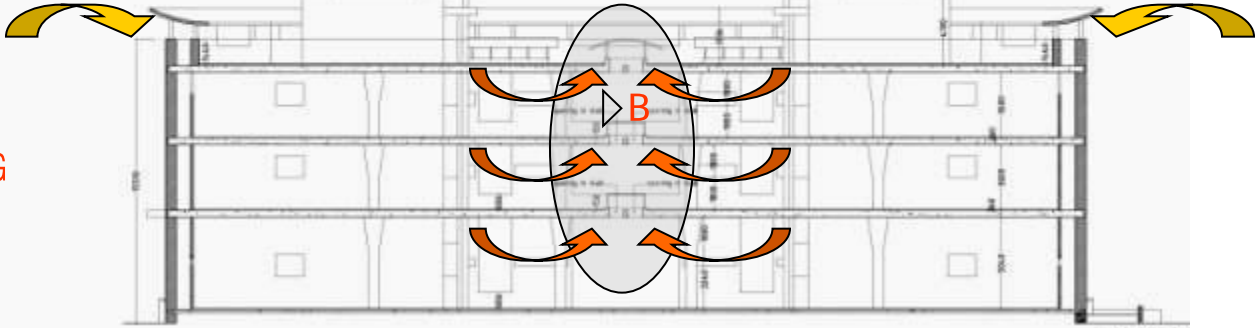
NATURAL COOLING, VENTILATION AND LIGHTING



AIR INTLETS

HOT AIR OUTLETS

AIR INTLETS

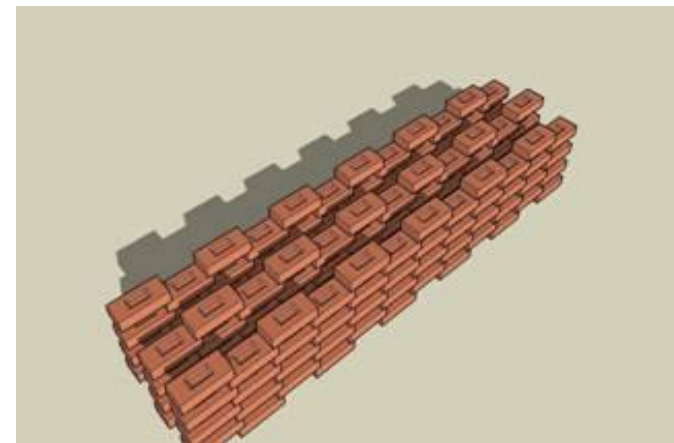
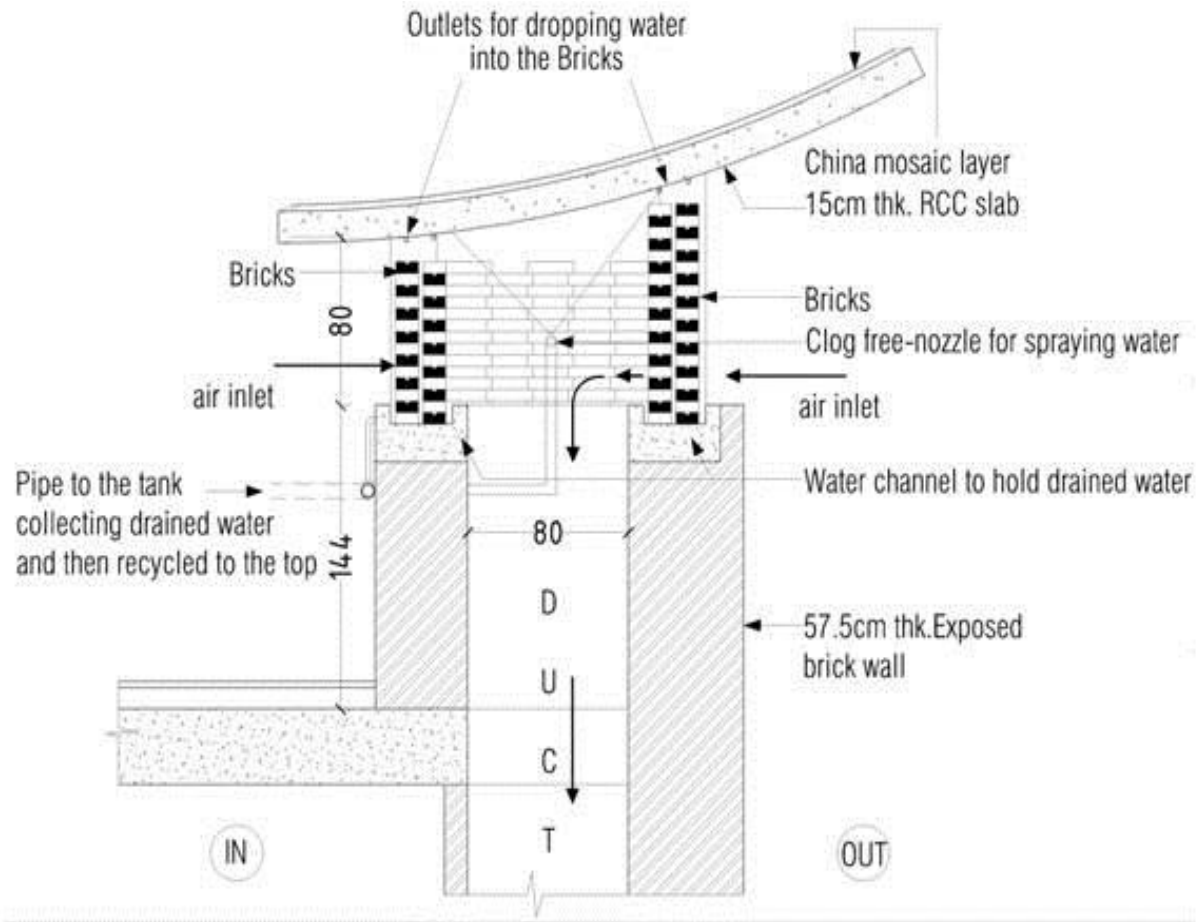


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PROPOSED FACTORY BUILDING - MADHU INDUSTRIES - AHMEDABAD



PROPOSED FACTORY BUILDING MADHU INDUSTRIES - AHMEDABAD

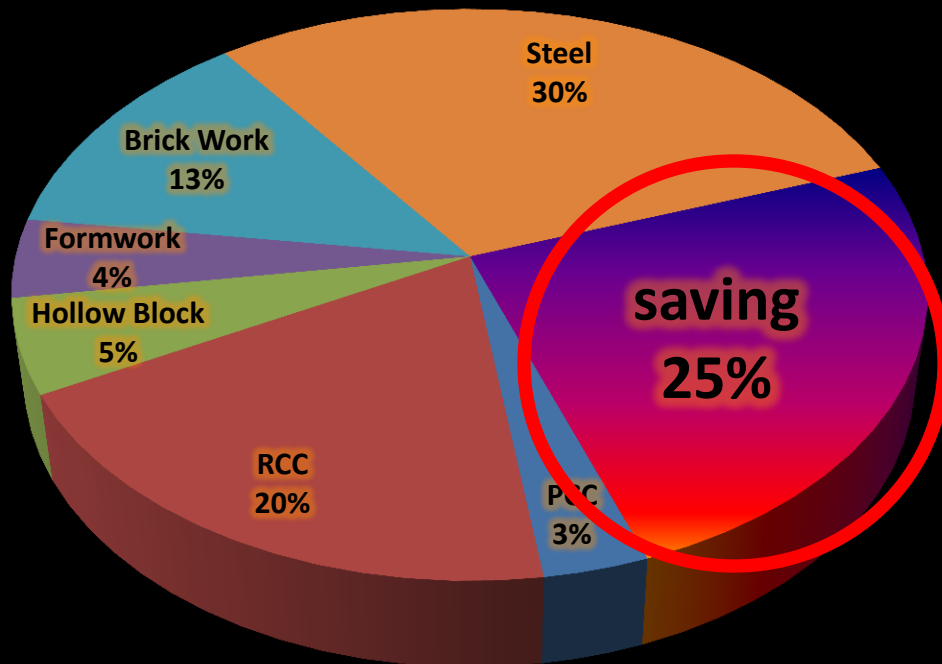




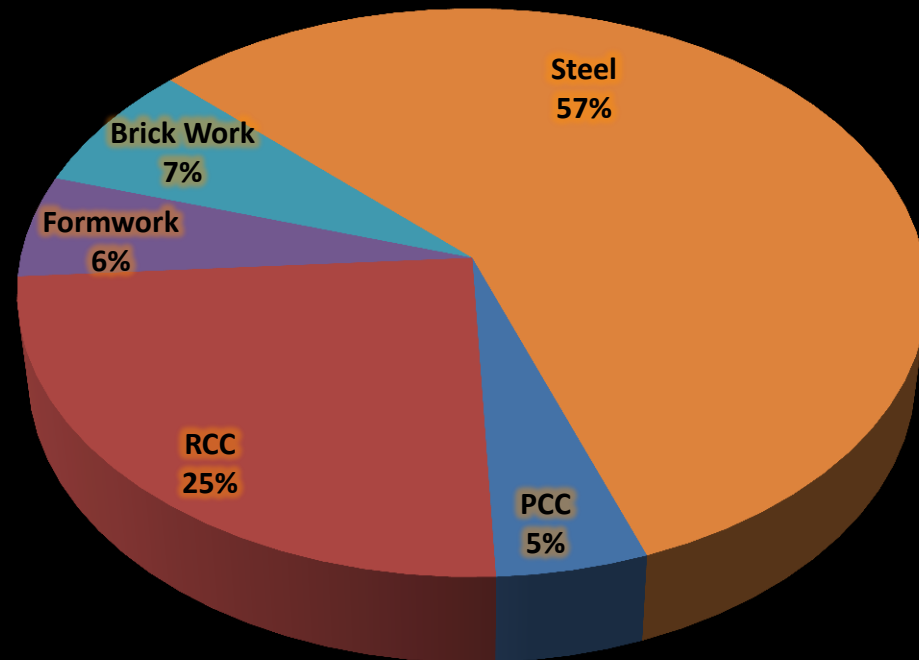
EMBODIED ENERGY & COST

FLYASH BRICK BOX & HOLLOW BLOCK FLAT SLAB VS. FRAME

LOAD BEARING STRUCTURE WITH HOLLOW SLABS



FRAME STRUCTURE



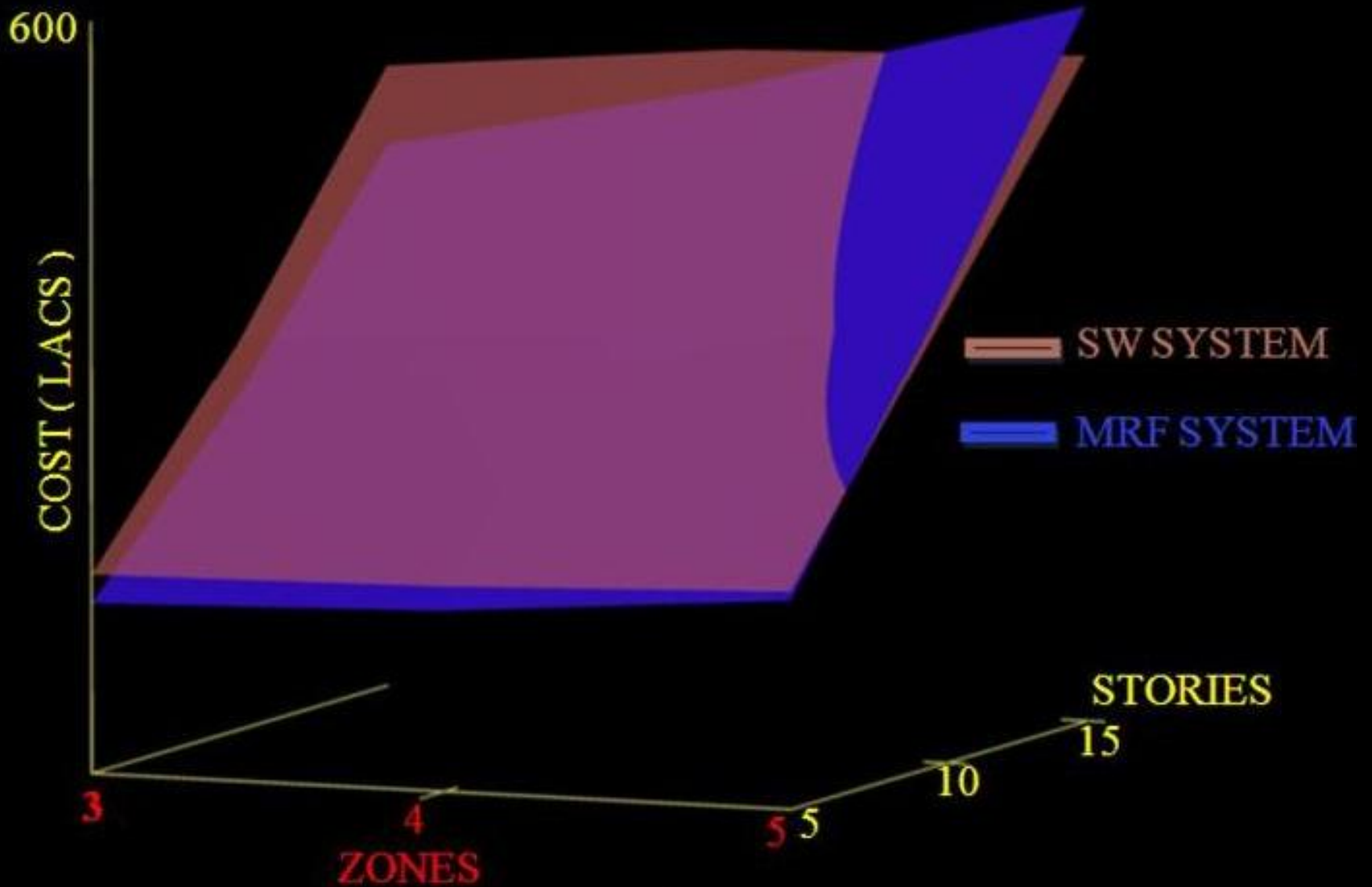
Finished cost **Rs. 700/sq.ft.** and power consumption reduced by **40%**

CIMS HEART HOSPITAL, AHMEDABAD



2,00,000 sqft. B + 4 storey hospital in loadbearing, fully built in 1 year at the total cost of Rs. 1500 per sqft. including all finishes and services - year 2011.

SHEAR WALL & FLAT SLAB VS. CONVENTIONAL FRAME

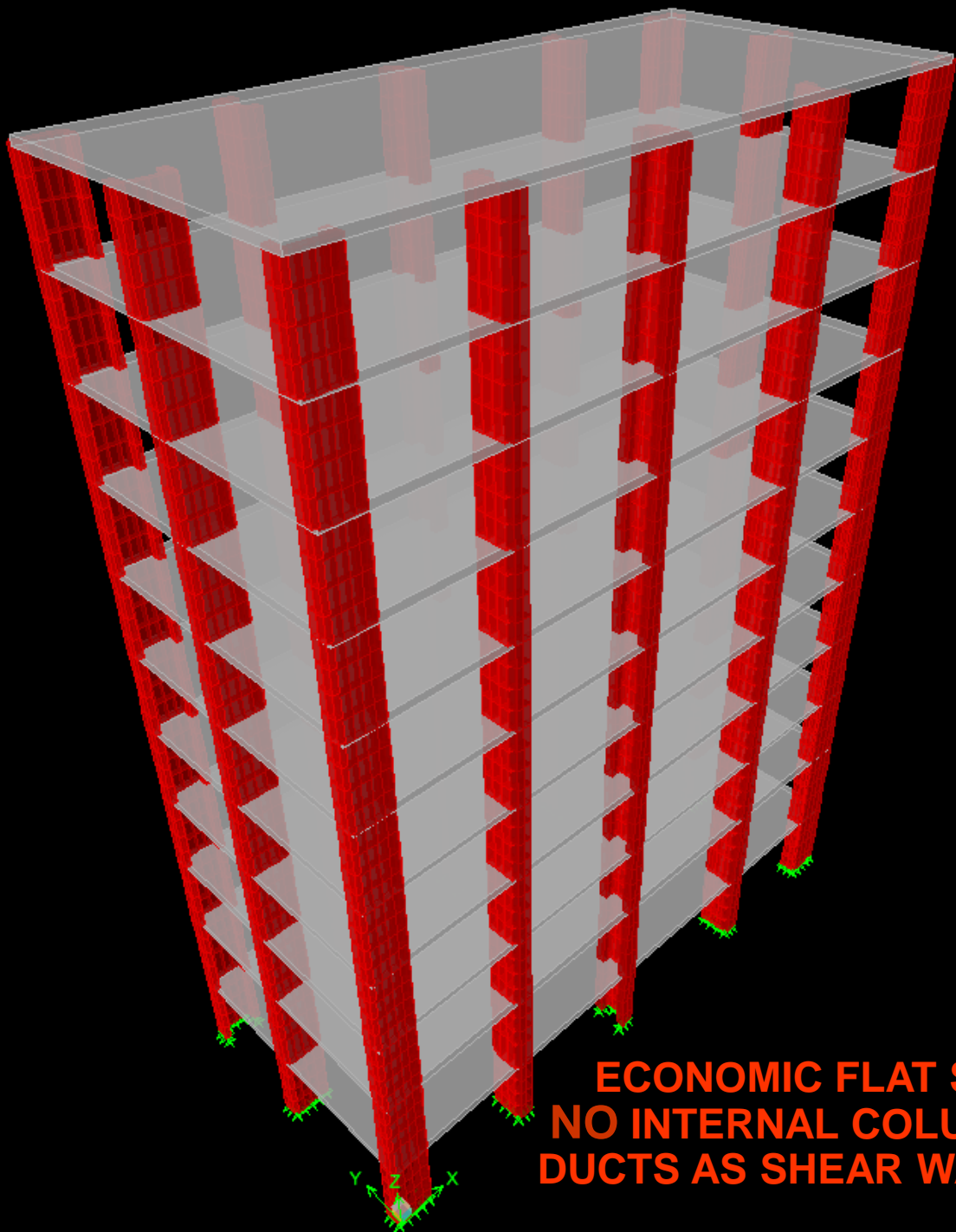


LOW RISE: FLAT SLAB, SHEAR WALL & COLUMN SYSTEM

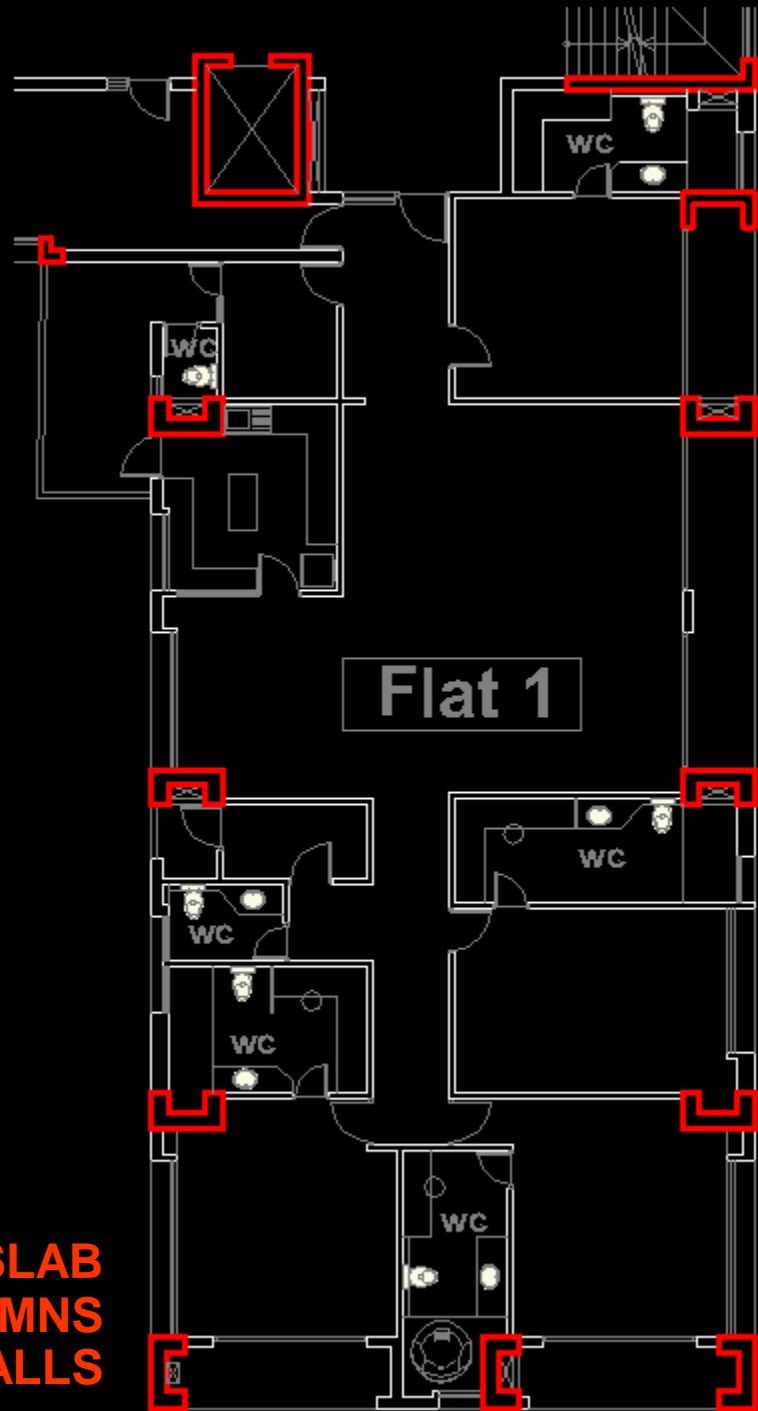


HIGH RISE: NIWARU, TILAK MARG, JAIPUR





**ECONOMIC FLAT SLAB
NO INTERNAL COLUMNS
DUCTS AS SHEAR WALLS**



ADVANTAGES

LESS HEIGHTS AND COOLING VOLUMES

BEAMS NOT INTERFERING WITH SERVICES

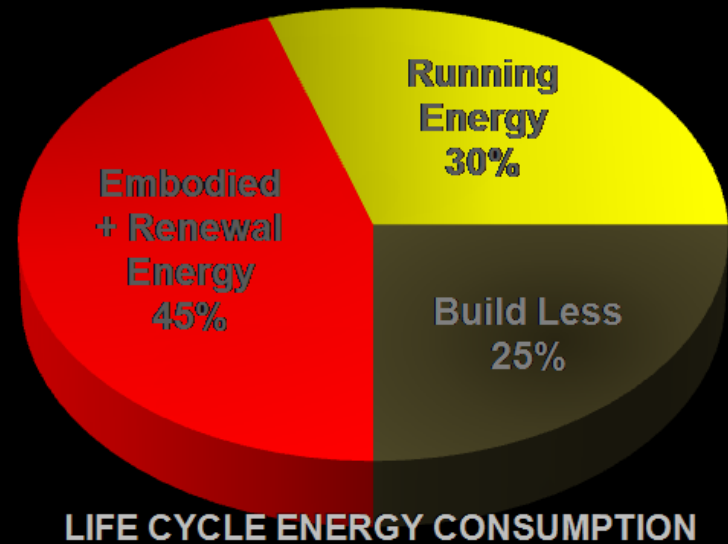
PARTITION FLEXIBILITY

FASTER TO BUILD

CLEANER LOOKING

CHEAPER BY ABOUT 20%

FUNDAMENTAL FLOWS OF RATING SYSTEMS:



✘ The embodied energy, constituting a large component of life cycle energy, misses fair evaluation as there are no measures of human ingenuity.

✘ Active technology interventions score over passive non-consumption.

✘ Low rewards for nurturing crafts, job creation and trickle-down prosperity in preference to mechanisation; poverty being the worst polluter.

✘ No rewards for building less.

**So much for the work in the earlier slides!
It has taken years to cope with buildings which 'float', now I have to design 'green' buildings which 'float'!!**



MINDFUL BUILDINGS

KEEP IT SIMPLE

CONSERVE AND HARNESS RESOURCES

BRING IT ALL TOGETHER

THANK YOU