Workshop for Architecture Students

A workshop for Architecture students was conducted at IIT Kanpur recently. The aim was to draw the attention of architecture students towards keeping the earthquake engineering aspects in view while designing their structures. The workshop was attended by 52 participants from 19 colleges of architecture. The successful conduct of the workshop was facilitated by the following faculty:

- Prof. Keya Mitra, Department of Architecture, Bengal Engineering & Science College, Shibpur
- Prof. Mahua Mukherjee, Department of Architecture, IIT Roorkee, Roorkee
- Prof. Vasudha Gokhale, Dr. B.N. College of Architecture for Women, Pune
- Prof. Meera Shirolkar, Dr. B.N. College of Architecture for Women, Pune
- Prof. Atanu Dutta, Department of Civil Engineering, NIT Silchar

The design assignment which was completed by the participants during the workshop was finally evaluated by the jury consisting of: Prof. Mahesh Tandon, CMD, Tandon Consultants & Private Limited, New Delhi, Dr. A.K. Mittal, Retired Structural Engineer from CPWD, Ar. Rajat Ray, Principal, Sushant School of Architecture, Gurgaon, Ar. Sushmita De, Practicing Architect, Kolkata and Prof. Sudhir K. Jain, Director, IIT Gandhinagar.

The brief was to design a housing project in a hypothetical 200 m x 100 m site in Delhi, located in Seismic Zone IV. The workshop participants were divided into two-member groups where each member was from a different institute. They were asked to develop a design proposal which should be rational in functional, structural and aesthetic terms. While the participants were encouraged to adopt innovative design approaches, the objective of this design exercise was to evaluate their understanding of earthquake resistant architecture and application of the same in a design project.
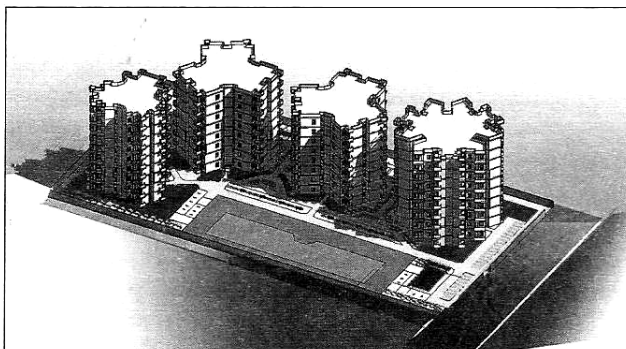
Figure 1. View

Six designs that incorporated earthquake resistant features without compromising the host of other requirements such as functionality, climate, etc. were shortlisted during the initial round. The jury looked particularly for a clear understanding of structural system that would be effective in withstanding earthquake loads. The award winning designs are featured here.

First position

- Ms. Dipti V. Bhaindarkar, Rachna Sansad Academy of Architecture, Mumbai

- Ms. Suryabala Sah, Birla Institute of Technology, Mesra, Ranchi

The first prize winning design in Figure 1 makes a clear distinction between the lateral load resisting systems
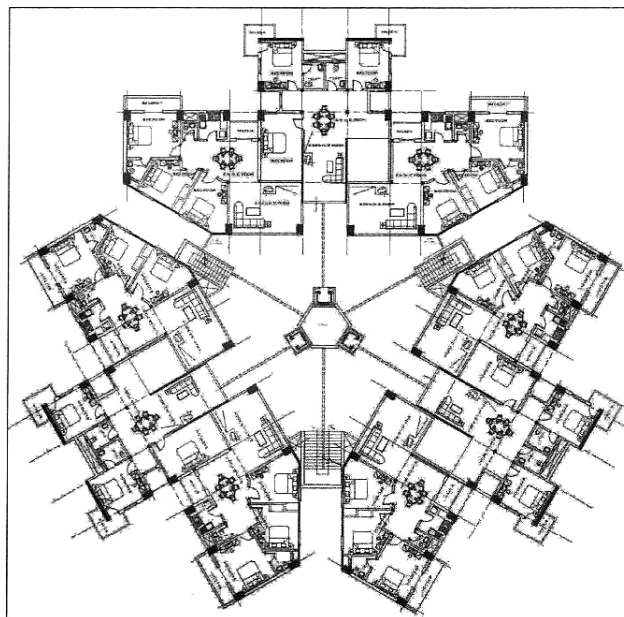

Figure 3. Architectural plan of typical floor

(both moment resisting frames and RC shear walls are proposed to be used) and the gravity columns in the design. The structural system is rational and does not compromise any of the other architectural considerations. This is evident from the structural system shown in Figure 2 and the detailed architectural typical floor plan in Figure 3.

Earthquake resistant concepts are well understood and effectively employed. The sizes of the structural members are arrived at correctly and the design solution is mature, creative and rational.

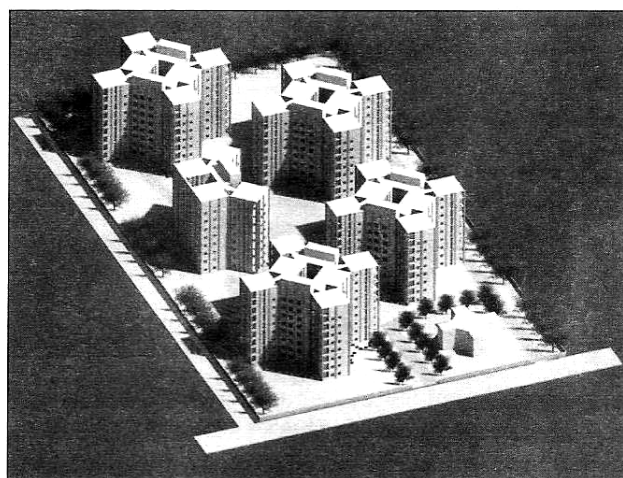

Figure 2. Proposed structural system.
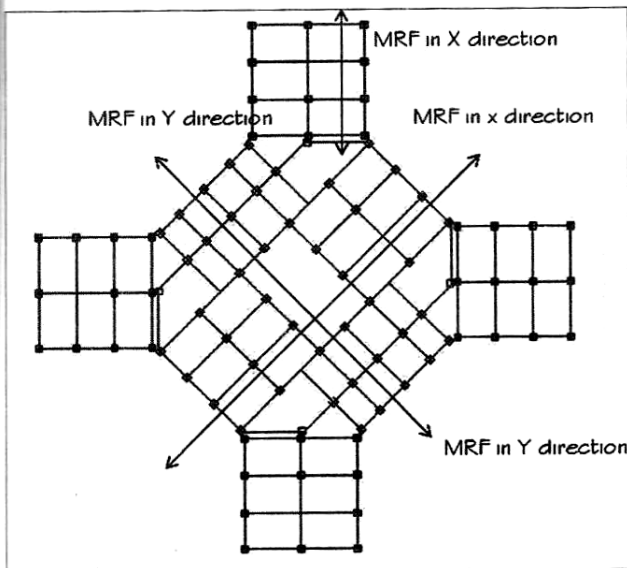

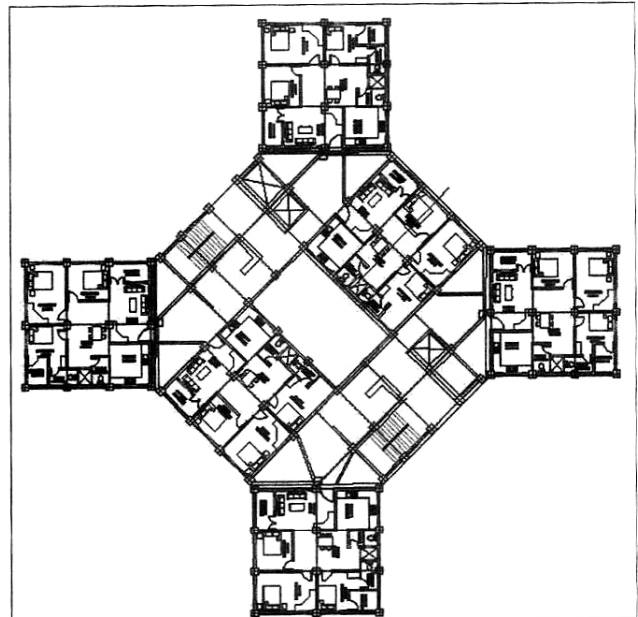Figure 4. View of the proposed housing

Figure 5. Structural system

Figure 6. Architectural layout of a typical floor

Second Position

- Ms. Apoorva V. Mahajan, BKPS College of Architecture, Pune

- Mr. Narayanan T., SRM University, Kattankulathur

This design solution adopts a simple grid, with uniform plan layouts. Moment resisting frames have been used in both orthogonal directions to resist lateral loads. The service cores have been located along the outer edges of the building to facilitate evacuation in case of a disaster. Climatic considerations have been effectively addressed by providing a well ventilated open courtyard at the centre and placing individual apartments in a way to ensure that 3 sides are open for adequate light and ventilation (Figures 4 to 6).
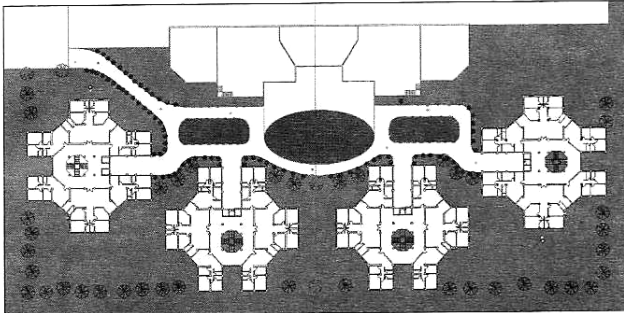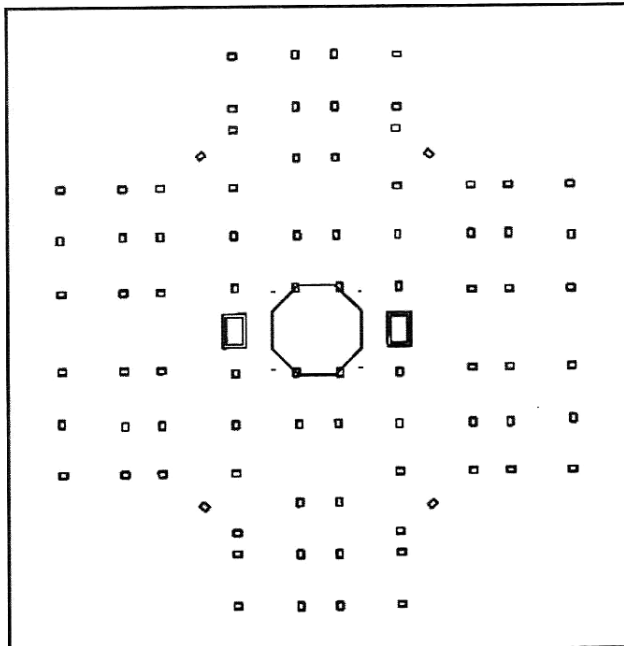

Figure 7. View

Figure 8. Site plan

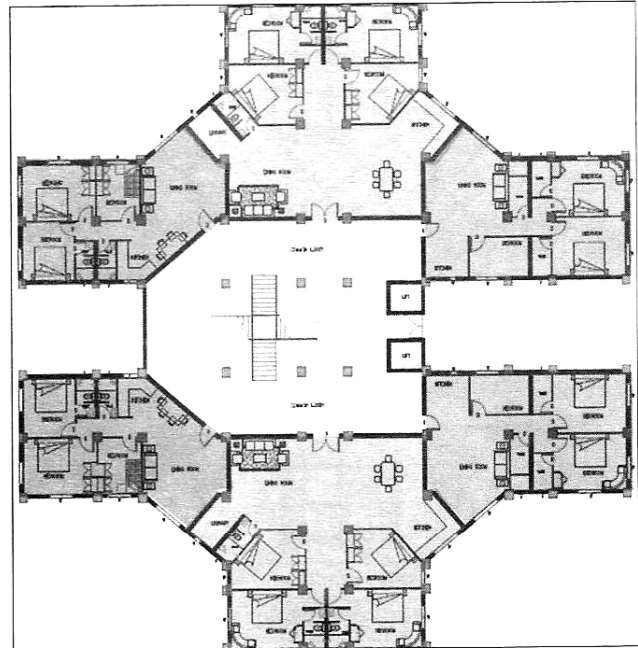
Figure 9. Structural layout

Figure 10. Architectural layout of a typical floor

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Third Position
- Mr. Nitin Agarwal A., SRM University, Kattankulathur, Tamil Nadu
- Ms. Prerna H. Thacker, Rachna Sansad Academy of Architecture, Mumbai

This design solution adopts a simple cruciform plan where the corners are chamfered to minimize corner effects. Moment resisting frames have been used in both orthogonal directions to resist lateral loads. The service cores have been located at the centre. An attempt has been made to maximize exterior views in all the apartments keeping in mind lighting and ventilation requirements (Figures 7 to 10).

The workshop was sponsored by Computers and Structures Inc (CSI), Council of Scientific & Industrial Research (CSIR), New Delhi, Ministry of Earth Sciences,