

PROBLEM STATEMENT BY STERLING ENGINEERING CONSULTANCY SERVICES PVT. LTD

FOR PARTICIPATION IN APOGEE, BITS, PILANI

Global warming and carbon emissions have become the biggest concerns the world over. Civil Engineers cannot remain isolated from the efforts being made to neutralize the phenomena, particularly since, industrial, manufacturing and transportation activities supporting development and construction activities contribute maximum to the carbon embodiment and emissions. The challenge has to be taken on by Civil Engineers as a socially responsible professionals, and come up with solutions that will see significant reduction in use of manufactured materials in the construction activities, use recyclable materials and consume the least conventionally sourced energy.

On this background, the current project challenge is defined as follows:

Project Challenge :

1. Based on a given architectural set of drawings, propose alternate structural systems
2. Conceptually design structural systems to address gravity and lateral loads
3. Identify alternate construction materials in the production and supply of which, least carbon emissions and embodiment is envisaged
4. Calculate embodied carbon and carbon emissions for each of the structural and finishing alternatives
5. Extend the single dwelling unit study to a community habitat that involves local material, water and energy resource and develop a concept of self sustaining cluster development.

Deliverables :

1. Conceptual design drawings for alternate structural systems
2. Proposal for alternate materials of construction - description, sourcing, manufacturing processes, availability, reasons for selection from sustainability point of view, material properties, mechanical properties, suggested application in construction of the dwelling units.
3. Block estimates of construction material quantities for each of the alternatives

4. Cost estimate of each of the alternatives
5. Calculations for carbon embodiment and emissions for each alternative
6. Recommendation for the best solution
7. Masterplan of a community habitat involving the selected dwelling unit option
8. Report on the masterplan concept, merits and potential negatives.

Internship Possibilities at SEC

The best winning team can join Sterling Engineering office at Mumbai or Bangalore to get further inputs on the preparation of the feasibility reports, sources of information, structural design inputs for various materials and administrative support for preparation of reports, drawings and estimations.

Limitations :

The outcome of the study, research and exercises that will lead to the final documentation, shall be strictly the property of Sterling Engineering Consultancy Services, and shall not be used in any manner for any commercial purpose without express permission of Sterling Engineering Consultancy Services.