ENCODE STEEL

COMPETITION DESCRIPTION

In Delhi stands the mighty pillar that has survived the ravages of time for centuries i.e. IRON PILLAR OF DELHI. This iron pillar was made to honor one of the most important Hindu Gods – Vishnu. The pillar has attracted the attention of archaeologists and materials scientists because of its high resistance to corrosion and has been called a "testimony to the high level of skill achieved by the ancient Indian iron smiths in the extraction and processing of iron. It is arcane, it's 24 ft iron pillar. Iron remains same then, now and forever but not the capabilities of those who engineered them. So, ASCE PEC presents you with an opportunity to redefine your structural capabilities with its event in collaboration with Techfest 2018 IIT Bombay - ENCODE STEEL at PECFEST'18.

OBJECTIVE

1. Design of G + 10 residential structure.
2. Design drawings showing various views and general arrangement.
3. Detail drawings showing critical connections base plate details.
4. Detailed bill of materials

SUBMISSION AND EVALUATION

1. General arrangement and structural design drawings showing plan, elevation and sectional views highlighting the structural systems of the proposed structure.

2. Detail drawing(s) showing connection details of beams, columns, bracings, claddings, etc. in accordance with 'Design Scope'.

3. All drawings should be drawn in AutoCAD or any other CAD software. Submission should be submitted in Soft copies (PDF) only.

Event Coordinators:

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4. Design calculations should be complete in all respects and neatly presented in the form of design report (PDF in A4 size paper). Use of standard analysis software like STAAD.Pro or similar is desirable. Design checks for the selected sections (at least one from each type i.e. column & beam) shall be presented manually preferably in spreadsheets format, such as MS Excel. Connection design calculations and detailed sketches (at least one for each type of connection envisaged) must be submitted.

5. A brief write-up (Max. 1000 words, duly typed on A4 size paper) on the work (consisting of design considerations, assumptions etc.) shall be included as a preamble to the design report.

6. File used in the software for structural design shall be properly named, zipped into a single folder and submitted as mentioned at the end of Problem Statement. These files should be adequate for recreating the design.

7. During the final presentation, weightage shall be given for structural design safety, economy, durability and practical aspects of execution.

8. List of candidates selected for final presentation shall be intimated well in advance and the drawings and calculations shall be presented in hard copy at the venue.

9. Last date for submission is 15th October 2018.

CONSIDERATIONS

1. Material for Construction:

Main Frame members like columns, beams, bracing systems and base plates (hinged base)	High tensile steel (grade E350BR) structural sections and plates
Wall cladding, Parapet	Brick masonry
Floor (1mm profile sheet as integral part of RC slab - Load to be considered accordingly)	RC slab

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2. Standard Details of the Structure:

Plan - Refer attached scheme as a tentative general arrangement drawing

Location (for wind & seismic consideration)	Mumbai
Parking Area	Ground floor
Water Tank (at the top of building)	12,000 litres capacity (for load purpose only)
Nature of connections (preferably bolted)	Welded/bolted connections
Analysis of structure	3D using any design software
Design of structure	IS 800:2007 - Limit State Design
Sections to be used (only angle sections and parallel flange sections)	Rolled structural steel sections as per IS 12778:2004 (NPB & WPB) and for angles IS 808:1989

Two Lifts (Capacity 6 members each)

Note: Arrangement showing individual parking area for each flat is ***not required****.*

3. Exclusions *(Design and detailing not required)*:

- Foundation design and detailing.
- Floor design and detailing.
- Plumbing and electrical requirements.
- Machine room for lifts
- Water tank

TECHNICAL DETAILS

DESIGN CODES & STANDARDS

1. **Design**
   - Steel design - As per IS: 800 – 2007
   - Dead Load - As per IS: 875 Part 1 – 1987
   - Live load - As per IS: 875 Part 2 – 1987
   - Wind load - As per IS: 875 Part 3 – 2015
   - Seismic load - As per IS: 1893 Part 1 – 2016 & IS: 1893 Part 4 – 2015

2. Sections / Materials
   - Parallel Flange Sections - As per IS 12778 – 2004
   - Angle sections - As per IS 808 –1989

3. Welding
   - Symbols for welding - As per IS: 813 – 1986
   - Weld joint details - As per IS: 9595 – 1996

4. Fasteners
   - High strength structural bolts - As per IS: 3757 – 1985 & IS: 4000 – 1992
   - Foundation bolts - As per IS: 5624 – 1993

PARAMETERS:

Following are the requirements for the proposed project:

1. Site Location: Mumbai, Maharashtra
2. Building Type: Residential
3. Plan Dimension as per enclosed drawing: Length = 15 m , Width=11 m
4. Column locations: Column placement should be such that possibility of vehicle movement shall be ensured.
5. Beam & Column: Steel Sections (NPB/WPB only)
6. Storey Height: 3 m each storey
7. No. of storeys: 11 (G +10)
8. Bracings: As per design requirement without effecting functionality of the structure (i.e. possibility for vehicle movement at ground floor level, not obstructing doors and windows etc.)

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DESIGN LOAD

1. Dead Load: Dead Load will be the weight of the structure itself along with all permanent weight carried by it.
2. Live Load: As per IS: 875 Part 2 - 1987
3. Wind Load: As per IS: 875 Part 3 - 2015
4. Seismic Load: As per IS: 1893 Part 1 – 2016

OTHER RULES:

1. Originality of work is essential, and the application will be disqualified, if found otherwise.
2. Decision of the **Expert Committee/organizers will be final and binding**. Canvassing in any form will lead to disqualification.

REGISTRATION AND SUBMISSION

TIMELINE

Last date of registration	10th October, 2018
Last date for submission of abstracts	15th October, 2018
Announcements of teams selected for finals	21st October, 2018
PECFEST Finale	TBA

ABSTRACT SUBMISSION

Teams will be required to submit their submission to:- asce.pec.india@gmail.com

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SPECIFICATION and ELIGIBILTY

A team may consist of a maximum FOUR participants. Students from different educational institutions can form a team.

Only students with a valid Student Identity Card of their respected institutes are eligible for competition.

Winner of the competition shall get a direct entry into the final competition to be held at Techfest 2018, IIT Bombay.

For any queries reach us at :

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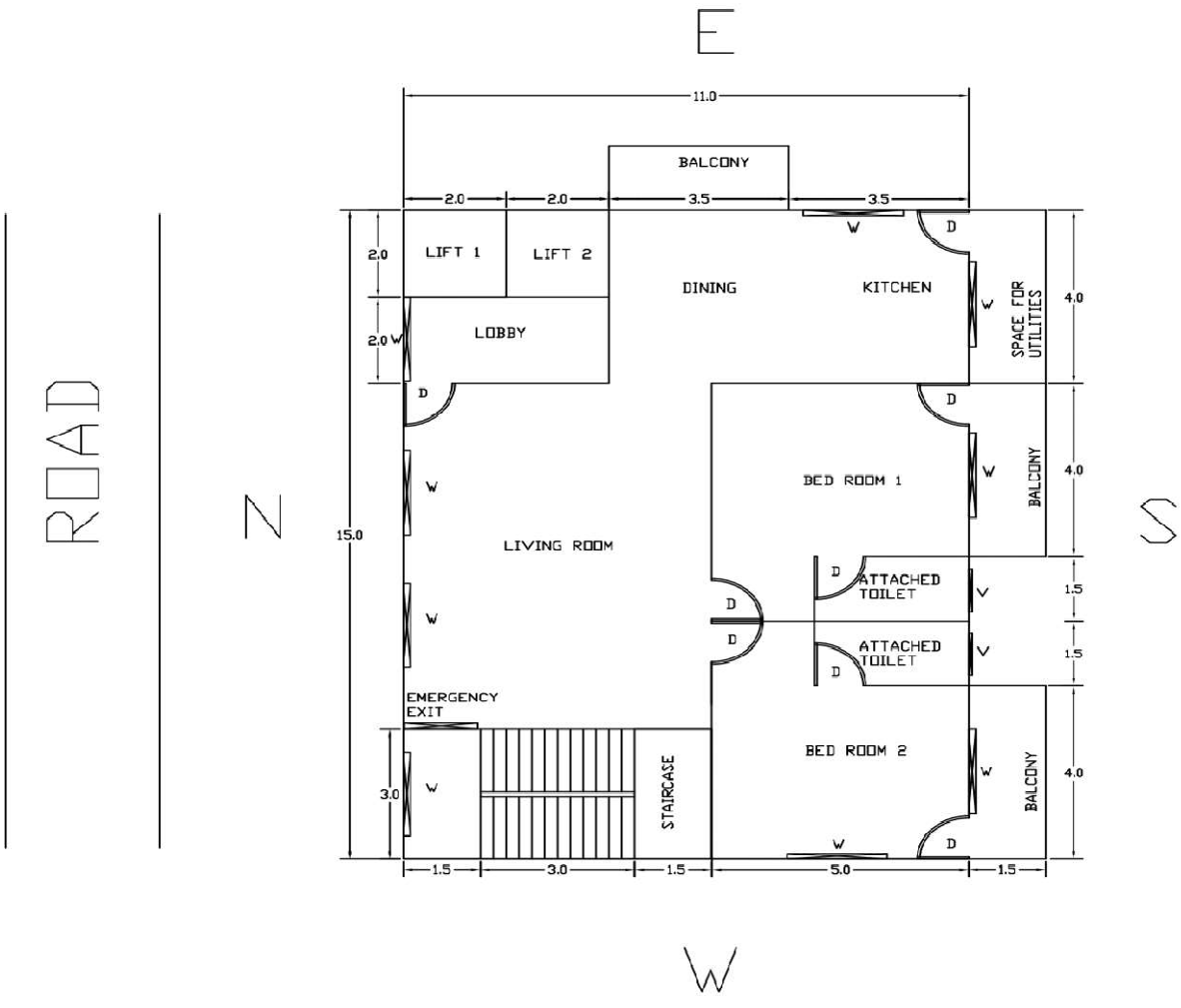
PECFEST 2018



2 BED ROOM APARTMENT