

Announcement for NACS (C) 2010 - 2011
NATIONAL AWARD SCHEME FOR CIVIL/STRUCTURAL ENGINEERING
STUDENTS FOR BEST INNOVATIVE STRUCTURAL STEEL DESIGN

THE INSTITUTE

The Institute for Steel Development and Growth (INSDAG) is a non-profit making member based organization, promoted and established at Kolkata by the Ministry of Steel, Government of India and the main steel producers of the country. Some of the major roles of the Institute are: awareness about benefits of steel and steel usage; preparing guidebooks, handbooks to facilitate cost effective design and construction by professionals; upgrading competence and skills of professionals by organizing refresher courses / training; communicating the benefits of steel vis-à-vis other competitive materials through life cycle cost studies etc.; regular interaction with Bureau of Indian Standards, Indian Road Congress and RDSO (Railways) for expediting revision in steel related codes for efficiency and cost effectiveness; providing requisite thrust to increased usage of steel and a host of other activities.

**To work in unison
with all the
stakeholders
in the Steel
Industry so as to
evolve ways &
means for more
efficient use
of steel and
provide optimum
value to the
customer**

THE COMPETITION

This National Level "Competition for Civil / Structural Engineering Students for Best Innovative Structural Steel Design" organized by INSDAG is entering into 11th consecutive year. This Competition aims at enkindling the thoughts and skills of the students to come with efficient designs reiterating the multifarious advantages of steel intensive construction such as flexibility in design, economic and ecological benefits, speedy construction, cost effectiveness, life cycle cost benefit etc.

Owing to the keen interest generated among the students, INSDAG is pursuing the task of arranging an interesting and challenging competition every year for the students of Civil / Structural Engineering studying in the Colleges all over India with a view to recognize, appreciate and finally reward the talents of would-be Civil / Structural Engineers for "Excellence in Structural Steel Design".

THE BRIEF

The Brief on the subject of the Competition is available in this brochure along with the **Announcement**.

THE PRIZE

1st Prize (1 no.) : Rs. 35,000/- + scroll of honour
2nd Prize (2 nos.) : Each Rs. 25,000/- + scroll of honour
3rd Prize (2 nos.) : Each Rs. 12,500/- + scroll of honour

All those who are unable to win the above Prizes in the Final Round will be given a technical book as a consolation prize. Participation certificate will be provided to all the eligible participants.

ELIGIBILITY

The " **Competition** " is open to all the **final year / pre-final year Civil/Structural Engineering Students** (individual participant / a group of maximum four students) from any AICTE approved University / Engineering College in India offering **Full Time Undergraduate Degree Courses**. Students studying **Full Time Post Graduate Course in Civil/Structural Engineering** can also participate as an individual participant or in a group with a maximum of three other **final year / pre-final year Undergraduate Civil/Structural Engineering Students**.

THE SELECTION

Four Zonal Selection Committees (one each from the East, West, North and South Zones) consisting of renowned academics and professional engineers are entrusted the task of preliminary screening of the entries received in each zone. In this **Initial Round**, 16 (sixteen) best entries will be selected (four from each zone) based on overall merit of the proposals, in accordance with the criteria formulated by the Committees.

Sixteen individuals/groups of the short listed entries will be invited to Kolkata to display and present important aspects of their entry before the **Central Selection Committee** during the **Final Round** of Competition expected to be held around July–August 2011. The detailed programme, when finalized, will be intimated to the Colleges/participants sometime in June – July 2011. The top five proposals will receive the **Prizes**.

ENTRY / APPLICATION

The **last date of receiving of Expression of Interest (EOI) is 15th February 2011 and final Entries** for the Zonal Round of Competition is **31st March, 2011**. The Expression of Interest (EOI) shall be sent to **INSDAG, Kolkata** and the entries shall be directly sent to the respective **Zonal Centres** at the addresses mentioned hereafter **with intimation to INSDAG, Kolkata**.

NORTH ZONE

Dr. A K Jain, Professor
Civil Engineering Department
Indian Institute of Technology &
The Zonal Coordinator (North Zone)
INSDAG's Civil/Structural Engg. Award Competition
Roorkee, Uttaranchal - 247667
Email: ashokfce@iitr.ernet.in

SOUTH ZONE

Dr. N V Ramana Rao,
Principal & Prof. of Civil Engineering
JNTUH College of Engineering
Kakutpally, Hyderabad – 500 085
A. P.; India
Mobile:- 09849054319
Email: rao.nvr@gmail.com

EAST ZONE

Dr. S Ghosh, Professor
Civil Engineering Department
Bengal Engineering & Science University &
The Zonal Coordinator (East Zone)
INSDAG's Civil/Structural Engg. Award Competition
Attn.: Arijit Guha, (Sr. Manager)
INSDAG, 'Ispat Niketan', 1st Floor
52/1A Ballygunge Circular Road, Kolkata- 700019
Email: insdag@rediffmail.com

WEST ZONE

Dr. L M Gupta, Professor & Head
Applied Mechanics Department
Visveswaraya National Institute of Technology &
The Zonal Coordinator (West Zone)
INSDAG's Civil/Structural Engg. Award Competition
Nagpur - 440 011
Email: lmgupta_vrce@yahoo.co.in

Intimation to **INSDAG** shall be made to the following address:

Institute for Steel Development & Growth
'Ispat Niketan', 1st Floor
52/1 A Ballygunge Circular Road, Kolkata - 700019
Phone : 033-24614045 / 47 ; 033-2461 4692 / 93
Fax: 033-24614048 ; Email: insdag@rediffmail.com
Coordinators: Arijit Guha (098305 47316)
Dhruba Bhaduri (094322 92951)

SUBMISSION

The participants are advised to send their entries / applications containing the following:

1. General Arrangement and Design drawings showing Plan, Elevation and Sectional views of the proposed structure. (Recommended scale for detail views should not be less than 1: 10).
2. Detail drawing(s) showing Structural Steel details: truss members, beams, column, bracings, claddings, etc. in accordance with 'Design Scope'.

3. All drawings shall not be bigger than A1 size and should be presented in printed form.
4. Design calculations (A4 size paper) should be complete in all respects and neatly presented. Though manual analysis is more desirable, use of standard software analysis package like STAAD, etc. is also permitted. However, all the design checks for the selected sections should be done by manual method only. Analysis of atleast one frame/truss on either side must be done in 2D. **Connection design and detail sketches must be submitted.**
5. All computer input files are to be submitted in soft and hard copy form. **Output files needs only to be submitted in soft copies.**
6. A brief write-up (Max. 2000 words, duly typed on A4 size paper) on the work (consisting of considerations / assumptions, description of the proposal, highlights / special features, etc.) duly authenticated by HOD / Principal should be submitted.
7. A brief resume of the student(s) / applicant(s) containing name, address, phone / fax / e-mail number, name of University / College, year of study and registration / roll number of the participant(s), and 2 nos. recent passport-size attested photographs (for each participant) etc. should be submitted.
8. A certification from the Principal / HOD / Registrar of his / her Institute on office pad declaring bonafides under office seal / stamp should also be submitted.

OTHER RULES

1. **To be eligible for participation in the Competition it is essential for each student to enroll himself / herself as a student member of INSDAG before submitting application/entry to the respective Zonal Coordinators.**
2. Originality of work is essential and the application will be disqualified, if found otherwise.
3. The decision of the Expert Committees will be final and binding. Canvassing of any kind will lead to disqualification.
4. Outstation candidates appearing for the Final Round of Competition at Kolkata will be reimbursed with to-and-fro Air Conditioned (AC) 3-Tier Rail Fare by the shortest route on production of proof of travel. Accommodation in Guest House / Hotel will be considered depending upon availability.
5. Family members and relatives of Expert / Selection Committee and INSDAG Employees are debarred from taking part in this Competition.
6. All the entries / proposals received by INSDAG at all stages of the above Competition will be treated as property of INSDAG and will not be returned to the participants. Moreover, INSDAG will not take any responsibility in case of missing of any documents / communications from any side while in transit.

BRIEF OF NACS (C) 2010 - 2011

INTRODUCTION

Construction Industry in India is witnessing a phenomenal growth in all sectors of utility, be it the infrastructure, industrial, commercial or more importantly in the real estate sector for the last few years. All these are evident from the visible growth that is taking place all around us mostly in the urban environment. The urban society is witnessing this phenomenon through a wide spectrum of development mostly in the field of construction of urban amenities, like roads, bridges flyovers, commercial centers like shopping malls and multiplexes and last but not the least various high rise residential buildings / towers etc. With the ever spiraling increase in the demand of high class dwelling units in the metros and big cities due to increase in population in the urban sectors along with huge influx of population from the rural and semi-urban areas, the need of the hour is these sort of multi-storied building units.

APPOINTMENT AS CONSULTANT

One of the reputed structural consultants in India has been short listed to design a G + 6 residential multi-storied building in the heart of the city of Kolkata. Since the requirement is urgent, INSDAG has been able to convince the client that steel intensive design will not only complete the project in a much lesser time because of faster construction but also it will be cost competitive and more aesthetic and will have longer life than any of the other alternative methods of construction. Provisions will also be kept for adequate number of car parks in the ground level of the building as the order of the modern day construction of such units. In view of the challenge taken up by INSDAG to implement the aforesaid benefits of steel intensive construction to the client, INSDAG seeks your expertise in providing Analysis, Design, Detail Engineering and Estimation of “*A Steel-Intensive G + 6 Residential Building of total built-up floor area 3500 square feet per floor*”.

FACILITIES

The client for the building under consideration has specified the following requirements:

1. Location of Site : Kolkata
2. Total covered area in each floor : 325 sq. meter or 3500 sq. feet
3. Number of apartments per floor : 2 (minimum)
4. Covered area per apartments in each floor : 150 Sq. meter or 1600 sq. feet
5. Provision of car parks in ground floor : 12 cars (minimum)
6. Total width of southern front road : 12.0 m or 40.0 feet
7. Total area of plot of land : 1050 sq. meter or 12000 sq. feet
8. Width of plot (facing the main road) : 30.0 meter or 100 feet (approx.)
9. Length of plot (perpendicular to main road) : 35.0 meter or 120 feet (approx.)
10. Approximate Floor-area ratio (F. A. R.) : 1.80
11. Provision of Staircase : One central staircase accessible to all apartments
12. Provision of Elevators : One central elevators accessible to all apartments
13. Floor to floor height : 3.05 meters (minimum)
14. Minimum head-room for any access : 2.2 meters

MATERIALS FOR CONSTRUCTION

1. Foundation system : R.C.C. concrete of minimum grade M25
2. Floor slabs : R.C.C. concrete of minimum grade M25
3. Structural members like columns, beams and bracing systems : Structural steel of mild steel (Grade Fe410) or high tensile steel (grade Fe 490 or Fe 540)
4. Roof treatment : Any standard water proofing roof treatment
5. Floor finishes : Any standard modern first class floor finishes
6. External facades : 200 thick (minimum) 1st class modular brick work
7. Internal partition walls : 100 thick (minimum) 1st class modular brick work

STANDARD SHAPE OF THE STRUCTURE

While considering the shape and arrangement of the building, aesthetics, as well as structural integrity of the entire system has to be considered. The shape and orientation of the structure shall be such so as to attain the maximum benefit out of all the natural resources available surrounding the structure

DESIGN LOADS

1. Dead Load:

Dead load will be the weight of the structure itself along with all permanent weight carried by it.

2. Live Load:

- a. Live load on standard floor - as per IS: 875 Part 2 –1987
- b. Live Load on staircase - as per IS: 875 Part 2 –1987
- c. Live load Roof - as per IS: 875 Part 2 –1987

3. Wind Load:

Basic wind speed to be considered as 50 m /sec. as per IS: 875 Part 3 – 1987

4. Seismic Load:

Seismic Zone to be considered as Zone – III as per IS: 1893 – 2002

5. Other Loads:

Construction load: 100 Kg per sq. meters

GUIDELINES

The following guidelines should be taken into consideration:

1. Items designed in accordance with design scope, should be checked for axial, bending, bearing stresses etc. as applicable. Equivalent stresses and any other stresses necessitated by the relevant codes should also be calculated.
2. Deflection calculated should be within stipulations given in relevant IS code.
3. For designing of Base Plates and Foundation Bolts, grade of concrete to be considered as mentioned above

DESIGN SCOPE

For designing the building, the following scope of work needs to be undertaken:

1. Layout Plan, Elevation and Sectional views should show the arrangement facilities provided.
2. Beams & Columns: Sections, such as ISMB [refer SP 6 (1)], built-up sections or parallel flange sections [refer IS 12778-2002] will be preferred.
3. Connections: All connections shall be either welded connection or bolted connection using mild steel or high tensile bolts.
4. The design and detailing of the following items shall be done:
 - a. Analysis and design of floor slabs.
 - b. All secondary beams.
 - c. All horizontal bracings (if provided).
 - d. All vertical column bracings provided
 - e. All primary or frame beams.
 - f. All columns supporting the main building structures

- g. Structural steel staircase along with pre-cast RCC slab stair treads.
 - h. Splice (bolted) design for columns.
 - i. Connection design and detail between main beams and columns.
 - j. Connection design and detail between secondary beams and main frame beams
 - k. Connection detail between vertical bracings with columns.
5. Bill of Materials: A bill of materials (in A4 sheet) should be prepared for all items under design scope to determine the quantity of materials required.

EXCLUSIONS

Estimation of finish items like, plasters, floor finishes, roof treatments, electrical. Plumbing, and water management systems etc.

DESIGN STANDARDS

1. Design

- Steel design - As per IS: 800 – 2007; IS: 806 – 1968 / IS: 800 – 1984
- Concrete design - As per IS: 456 – 2000
- Live load - As per IS: 875 Part 2 – 1987
- Wind load - As per IS: 875 Part 3 – 1987
- Seismic load - As per IS: 1893 – 2002

2. Material

- Rolled sections and plates - As per IS: 2062 – 2006
- SHS/RHS - As per IS: 4923 – 1997
- CHS - As per IS: 1161 – 1998

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

EXPRESSION OF INTEREST FOR PARTICIPATION

(To be submitted by 15th February 2011)

NATIONAL AWARD COMPETITION FOR STUDENTS OF CIVIL/STRUCTURAL ENGINEERING YEAR 2010-2011

If you wish to participate in the Competition, you should complete this form, detach and return to the address given below in a sealed envelope.

Name of the college Location.....

University

Name of guiding faculty/HOD

Signature of guiding faculty/HOD

Student's name Mr./Ms..... Year of study: III / IV / PG

Home address

Tel. No. E-mail:

Student's name Mr./Ms..... Year of study: III / IV / PG

Home address

Tel. No. E-mail:

Student's name Mr./Ms..... Year of study: III / IV / PG

Home address

Tel. No. E-mail:

Student's name Mr./Ms..... Year of study: III / IV / PG

Home address

Tel. No. E-mail:

I/We agree to participate in the Competition organized by INSDAG for the Year 2010-2011 and request you to enroll my/our name(s) in your database for record purpose. We also agree to become student member(s) of INSDAG by paying Rs. 500/- each (one time only) by demand Draft in favour of "Institute for Steel Development & Growth", payable at Kolkata (Membership form and draft are attached / shall be sent separately).

Signature(s) 1. 2.

3. 4.

Please send to:

Director General

Institute for Steel Development & Growth (INSDAG)

'ISPAT NIKETAN', 1st Floor

52/1A, Ballygunge Circular Road

Kolkata – 700019

Phone: 033-24614045 / 47 ; 033-2461 4692 / 93

Fax: 033-24614048

IMPORTANT INFORMATION

Avail student membership (one time payment of Rs. 500/-) of INSDAG and get the opportunity to participate in this National Level High Profile Competition along with a Technical Book titled "INSDAG GUIDE FOR THE STRUCTURAL USE OF STEELWORK IN BUILDINGS" and many more benefits...

COMPETITION TOPIC:

**A Steel-Intensive G + 6 Residential Building of Total Built-up Floor Area 3500
Square per Floor**

JUDGING CRITERIA

Sl. No.	Stage of Evaluation	Evaluation Committee	Marks Allotted	Selection
1	Stage I	Concerned zonal committee	150	4 Best ranking entries qualify for Stage II
2.	Stage II	Other 3 zonal committees	450 (150 marks each committee)	-
3.	Stage III (Presentation round)	Central selection committee, Kolkata	400	-
4.	Final selection	- do-	Total marks 1000 (Sl. No. 1 to 3)	Prizes to best 5 entries

FIRST PRIZE WINNING COLLEGE IN THE PREVIOUS YEARS

Competition Yr.	College Name
2000-2001	College of Engineering, Goa
2001-2002	Indian Institute of Technology, Chennai
2002-2003	Govt. College of Engineering, Salem
2003-2004	S V P M College of Engineering, Malegaon, Pune
2004-2005	L D College of Engineering, Ahmedabad
2005-2006	Government Engineering College, Trissur
2006-2007	VNIT, Nagpur
2007-2008	L.D. College of Engg., Ahmedabad
2008-2009	Meghnad Saha Institute of Technology, Kolkata
2009-2010	Indian Institute of Technology, Kanpur

Last Date for Receiving 'EOI' – February 15, 2011
Last Date for 'ENTRY' Submission – March 31, 2011

Your Biggest Opportunity to Win Prestigious Prizes!!!