

Announcement for AWARD SCHEME FOR CIVIL/STRUCTURAL ENGINEERING STUDENTS FOR BEST INNOVATIVE STRUCTURAL STEEL DESIGN FOR THE YEAR 2009 - 2010

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 10th 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. 30,000/- + scroll of honour
2nd Prize (2 nos.) : Each Rs. 20,000/- + scroll of honour
3rd Prize (2 nos.) : Each Rs. 10,000/- + 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., 2010. The detailed programme, when finalized, will be intimated to the Colleges/participants sometime in June – July, 2010. The top five proposals will receive the Prizes.

ENTRY / APPLICATION

The last date of receiving of Expression of Interest (EOI) is 15th February 2010 and final Entries for the Zonal Round of Competition is 15th April, 2010. The 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:

Director General
Institute for Steel Development & Growth (INSDAG)
'Ispat Niketan', 1st Floor
52/1 A Ballygunge Circular Road, Kolkata - 700019
Phone 033-24614045 / 47 ; 2460 8058 / 9468
Fax: 033-24614048 / 24608407
Email: insdag@rediffmail.com
Coordinator: Arijit Guha (098305 47316)

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 to-and-fro Sleeper Class 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 FOR THE NATIONAL COMPETITION ON THE BEST INNOVATIVE STRUCTURAL STEEL DESIGN UNDER INSDAG'S SCHEME FOR STUDENT COMPETITION FOR THE YEAR 2009 – 2010

INTRODUCTION

India being one of the fastest growing nations of the world is currently undergoing tremendous burst of development in all sectors, be it industrial, infrastructural, commercial or the domestic sector. The development of each of these sectors is interdependent and they collectively control the economic growth of the country. In all these sectors the developmental tendencies are all quite visible to the common mass. One such sector is infrastructure development. Large scale expenditure is being incurred for sprucing up of National Highways all over the country and more expenditure on this account is on the anvil to encourage large scale foreign investments in various sectors. Improved road transport calls for introduction / up gradation of other associated modern facilities, one of which is construction of foot over-bridges for convenience of the pedestrians to cross the roads. These bridges are also very common in the urban area, more so in the metropolitan cities.

APPOINTMENT AS CONSULTANT

One of the reputed structural consultants in India has been short listed to design a pedestrian foot-over bridge over a National Highway near 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 in the foot over bridge for advertisement boards for generating revenue. 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 Foot Over-Bridge of span 30.0 meters*”.

FACILITIES

The following requirements have been specified by the client for the foot over bridge under consideration:

- | | |
|---|---|
| 1. Location of Site | - Kolkata |
| 2. Total Width of Road (Distance between Kerbs) | - 24.0 M |
| 3. Center-to-center distance between supporting steel trestle | - 30.0 M (approximately) |
| 4. Minimum span of the foot over bridge | - 30.0 M |
| 5. Minimum head room for pedestrian within the walkway | - 2.5 M |
| 6. Clear height of under side of bridge from road surface | - 7.5 M |
| 7. Clear width of walk-way within the bridge | - 3.0 M |
| 8. Height of side railing | - 1.1 M to 1.4 M |
| 9. Material for walk-way deck slab | - M25 grade R.C.C. Concrete |
| 10. Minimum width supporting trestle | - To match with width of over bridge |
| 11. Minimum length of supporting trestle | - Sufficient to accommodate stair case |
| 12. Width of stair case | - 2.5 M |
| 13. Maximum height of each flight of stair case | - 2.5 M to 3.0 M |
| 14. Minimum tread of staircase | - 230 mm to 250 mm |
| 15. Maximum riser for staircase per tread | - 150 mm to 170 mm |
| 16. Provision of roof cladding in bridge | - Roof cladding to be provided |
| 17. Provision of side cladding in bridge | - No cladding. Sides to remain unclad |
| 18. Provision of cladding in stair case | - No cladding at top and side of stair case |

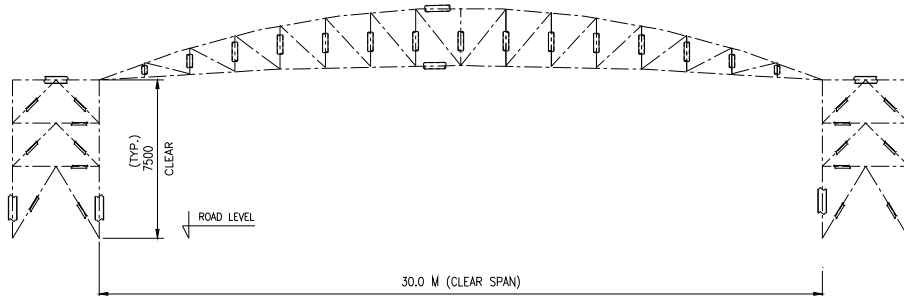
MATERIALS FOR ROOFING AND FACADES

The following material may be used as facades as per the references:

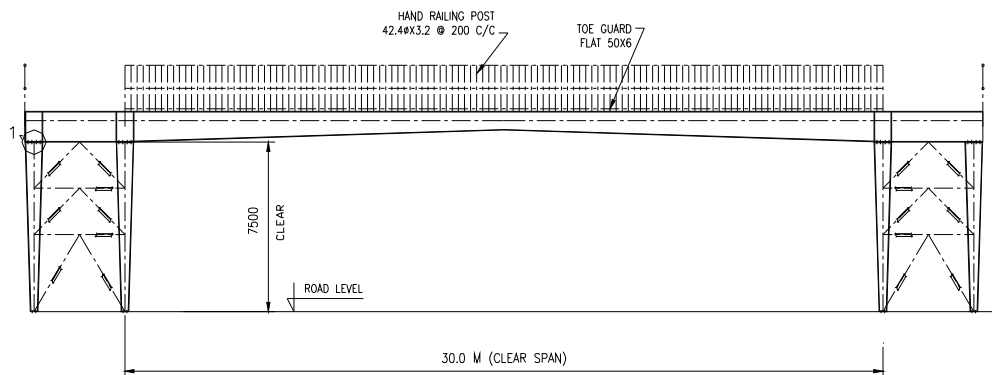
1. Roofing - Colour-coated Plain Profiled sheets as per manufacturer's specifications

STANDARD TYPES OF FOOTOVER BRIDGES

While considering the shape and arrangement of the foot over bridge, aesthetics, as well as structural integrity of the entire system has to be considered. Standard arrangement of foot over bridges is given below for general reference and is not binding for adoption. The girders can be arch type, plated girder, trussed girder etc. as per designer's choice.



Option 1 (Arch Type)



Option 2 (Plated Girder)

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 :

- Live load on roof of walkway - as per IS: 875 Part 2 –1987
- Live Load for walkway - 500 Kg / Sq.M
- Live load on staircase - 500 Kg / Sq.M

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 :

Load from Hand railing: 20 Kg / running meter on each side of walk way

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 M25 as per IS: 456 – 2000.

DESIGN SCOPE

For designing the foot over bridge, 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. Roof Structure of walk way: Three dimensional space frames or two dimensional truss systems must be adopted.
4. Connections: All connections shall be either welded connection or bolted connection using mild steel or high tensile bolts.
5. The design and detailing of the following items shall be done:
 - a. Purlins supporting the roof.
 - b. Rafter bracing system.
 - c. The main bridge girders (preferably truss).
 - d. The columns of the supporting steel trestles
 - e. Vertical columns bracings of the supporting trestles.
 - f. Horizontal bracings as and where provided in the main bridge for lateral stability.
 - g. Splice (bolted) design for main girders.
 - h. Connection design and detail between main girder and columns.
 - i. Design and detail of base plate for main columns using foundation bolts.
 - j. Connection detail between secondary beams and vertical bracings with columns
6. 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

The design of Beraring, and Foundations.

DESIGN STANDARDS

1. Design

- Steel design - As per IRC : SP : 56 – 2000 / IRC : 6 – 2000 / 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, 2010)

NATIONAL AWARD COMPETITION FOR STUDENTS OF CIVIL/STRUCTURAL ENGINEERING YEAR 2009-2010

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 2009-2010 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. 200/- 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

Ph: (033) 2460 8058/9468 ; 2461 4045/4047/4968/4969

Fax: (033) 24614048/ 24608407

IMPORTANT INFORMATION

Avail student membership (one time payment of Rs. 200/-) 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" worth Rs. 850/- and many more benefits...

COMPETITION TOPIC:

A Steel-intensive Foot Over Bridge of 30.0 Meter Span

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

Last Date for Receiving 'EOI' – February 15, 2010

Last Date for 'ENTRY' Submission – April 15, 2010

Your Biggest Opportunity to Win Prestigious Prizes!!!