



2023

NATIONAL AWARD COMPETITION FOR STUDENTS

For the best Innovative use of Steel in Architecture

Architectural Designing of a
R&D CENTRE AT VISAKHAPATNAM STEEL PLANT



Institute for Steel Development and Growth (INS DAG)

Announcement for NACS (A) 2023

NATIONAL AWARD COMPETITION FOR STUDENTS (2023) FOR THE BEST INNOVATIVE USE OF STEEL IN ARCHITECTURE

THEME: ARCHITECTURAL DESIGNING OF A R&D CENTRE AT VISAKHAPATNAM STEEL PLANT

THE INSTITUTE

Institute for Steel Development and Growth (INSDAG) is a non-profit making, member-based organization established at Kolkata by the Ministry of Steel, Govt. of India and the major steel producers in the country. The Institute primarily works towards the development of advanced design methodologies and technical marketing by expanding applications of steel in different segments, upgrading skills and know-how, creating awareness amongst potential users, providing efficient steel-usage technology / design aids / teaching aids, upgrading skills/ know-how, disseminating steel related information / database, establishing intimate industry-university interface and communicating the benefits of steel vis-à-vis other competitive materials, etc. To promote steel usage in India, the Institute has identified various projects / thrust areas under the direction of its Executive Council.

THE MISSION

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 OBJECTIVE

To create interest among the students of Architecture in using steel as a medium of their architectural expression and in exploiting numerous advantages of structural Steel as a material of construction, the Institute organises a "**National Competition for Students for the Best Innovative use of Steel in Architecture**"

as a part of its Industry-University interface. Starting from the year 1999-2000, the Institute is arranging an interesting and exciting competition every year for the students of Architecture all over India with a view to recognizing and rewarding the talents of budding Young Architects of tomorrow for "**Excellence in Steel Architecture**".

THE THEME

The Theme of the competition for the year 2023 is **ARCHITECTURAL DESIGNING OF A R&D CENTRE AT VISAKHAPATNAM STEEL PLANT.**

THE PRIZES

1st Prize	:	Rs. 50,000/-	+	Certificate
2nd Prize (2 nos.)	:	Each Rs. 30,000/-	+	Certificate
3rd Prize (2 nos.)	:	Each Rs. 20,000/-	+	Certificate

ELIGIBILITY

The "Competition" is open to all first year to final year UG & PG Architecture Students from any AICTE / COA approved University / Schools of Architecture in India.

- **UG Students: Team of maximum 4 (four) students in the team**
- **PG Students: 1(one) PG + maxim. 3(three) UG students or, 2 PG students in one group**

Students from Schools of Design in India may also participate.

Students from different colleges may form groups but in such case the colleges should be from same zone.

THE SELECTION

Four Zonal Selection Committees (one each for East, West, North & South Zone) consisting of renowned Architects and Faculties will make the Zonal Ranking (and Screening) of Entries at each Zone. In the **Zonal Round**, max. 16 (sixteen) best Entries will be selected (preferably 4 numbers from each Zone) based on the Zonal Ranking of the proposals, as per the criteria formulated by the Committee.

The participants of 16 short listed entries will be duly informed and called to Kolkata to appear before the **Central Selection Committee** in the **Final Round** of the Competition to display and present their design entries around **February 2024**. *The detailed programme will be intimated later to all concerned. The top five Entries will receive the Awards.*

ZONAL COORDINATORS

EAST ZONE [Assam, Bihar; Jharkhand; Odisha; West Bengal; Chhattisgarh; Tripura; Meghalaya, Manipur, Mizoram, Nagaland, Arunachal Pradesh, Sikkim]

Prof. (Dr.) Sumana Gupta,

Department of Architecture and Regional Planning,
Indian Institute of Technology Kharagpur,
Kharagpur, West Bengal - 721302

Mobile: 9433729054

E-mail: sumana@arp.iitkgp.ernet.in

NORTH ZONE [NCR; Himachal Pradesh; Haryana; J&K; Punjab; Uttarakhand; Uttar Pradesh; Madhya Pradesh]

Prof. (Dr.) Mahua Mukherjee

Department of Architecture & Planning, Joint Faculty, Centre of Excellence in Disaster Mitigation and Management,
Indian Institute of Technology Roorkee,
Roorkee, Uttarakhand, India - 247667

Mobile: 9411500150

E-mail: mahua1965@gmail.com, mahua@iitr.ac.in

SOUTH ZONE [Andhra Pradesh; Telangana; Karnataka; Kerala; Tamil Nadu, Puduchery]

Prof. (Dr.) Gundu Sai Sanath

School of Architecture,
Reva University, Bangalore 560064

Mobile: 9490272640

E-mail: saisanath.g@reva.edu.in,

INSDAG_NCSA2021southzone@reva.edu.in

WEST ZONE [Goa; Gujarat; Maharashtra; Rajasthan]

Prof. (Dr.) Durgesh Kulkarni

D. Y. Patil University School of Architecture,
Sr.No.124, 2016 At/Post-Ambi, MIDC Road, Talegaon
District Pune-410506, Maharashtra

Mobile: 7768825711

E-mail: durgesh.kulkarni@dyptc.edu.in,
durgeshkulkarni6382@gmail.com

GENERAL RULES

1. Each participating group is required to fill in the attached "Expression of Interest" (EOI) form **in soft format** for participation.
2. The participating students are required to enrol themselves as student member of INSDAG before submission of entries with student membership fees of Rs. 1000/- for each participant of the group via online.
3. Students who have already been enrolled as members of the Institute should mention their membership number only.

in the EOI form and need not pay any further membership fees.

4. Newly admitted PG students who had been INSDAG members while in UG need to pay the membership fees again.
5. There is no limitation of the numbers of participating groups from any Institution.
6. Originality of work is essential, and the application will be disqualified, if found otherwise.
7. The decision of the Selection Committee is final and binding. Canvassing of any kind will lead to disqualification.
8. Family members / relatives of Selection Committee / INSDAG Staff are debarred from taking part in this competition.
9. All the entries / proposals received by INSDAG at all stages of the above competition shall be treated as property of INSDAG. However, all the drawing sheets, documents & models received in hard format will be returned to the teams after the final round is completed.
10. INSDAG will not take any responsibility in case of missing of any documents /communications (if any) from any side while in transit.
11. Student Membership fees once received by INSDAG against registration in this competition shall not be refunded for reason(s) whatsoever.
12. Outstation candidates appearing for the final round of the competition in Kolkata will be reimbursed with to-and-fro ordinary AC 3-tier sleeper class / AC Chair Car fare by the shortest route on production of proof of travel. Accommodation in Guest House / Hostel will be organised by INSDAG depending upon availability. **However, any Guidelines regarding assembling etc provided by the Government will prevail.**

DELIVERABLES & SUBMISSION

The participants are invited to send their filled-up "[Expression of Interest](#)" (EOI) with payment receipt in soft format by email to insdagindia@gmail.com

The membership fees of Rs 1000.00 for each participant by **Internet Banking / UPI Payment (QR code) / cheque** may be dropped in the nearby drop box of **UCO Bank** payable to INSTITUTE FOR STEEL DEVELOPMENT AND GROWTH, Kasba Branch,

170 Shantipally Chakraborty Para, Kolkata 700107.

S/B a/c No.- **08370100004683**, IFSC- **UCBA0002081**

The participants are invited to send their **entries to respective Zonal Coordinators & INSDAG by E-mail within the date of submission of entry.**

EACH ENTRY SHOULD BE EMAILED IN SOFT FORMAT IN PDF (all documents), less than 25mb/email, in case multiple emails- should have a continuity like Part-1, 2 etc, to be SENT FROM THE SAME EMAIL ID.

HARD COPY NOT REQUIRED IN ZONAL EVALUATION.

The entries (all documents) should be in pdf format and should contain the following:

- A **self-declaration** by the applicant(s) certifying the originality of the work
- A **report** - 10 pages (max.) A4 size (inspiration, case, idea exploration, material palette, concept, understanding of the technical processes at various labs and facilities) – apart from the mentioned aspects, report should have the explanation of the developed design concept grounded in relevant architectural theory, to be within 300 words.
- **Structural Details** (Graphical construction sequence, basic load calculation, load path diagram, etc.)
- **Drawings** should be in appropriate scale (Preferably 1:500, 1:200, 1:100) and should contain:
 - Perspective View of the structures
 - Conceptual Drawings
 - Presentation Drawings
 - Elevations of major structures
 - Sections of major structures
 - Details of steel used area

Drawings to be **self-sufficient, easily understood.**

Drawings in **suitable scale – 8 nos. (max.) - A1**

FOR FINALISTS ONLY

Additionally, the followings are required:

- A physical 3D model in suitable scale
- in software a walkthrough to exhibit the design detailing and overall form and PowerPoint presentation on the project.

FINAL ROUND

Each team will display their drawings in hard format, models at the venue, which will be evaluated personally by the Central jury members via personal interviews.

This will be followed by an open presentation where the project may be explained by walkthrough and power point presentation (ppt within 10 slides). Duration: 15 mins (10 mins for ppt and walkthrough, 5 mins for Q & A)

DESIGN THEME

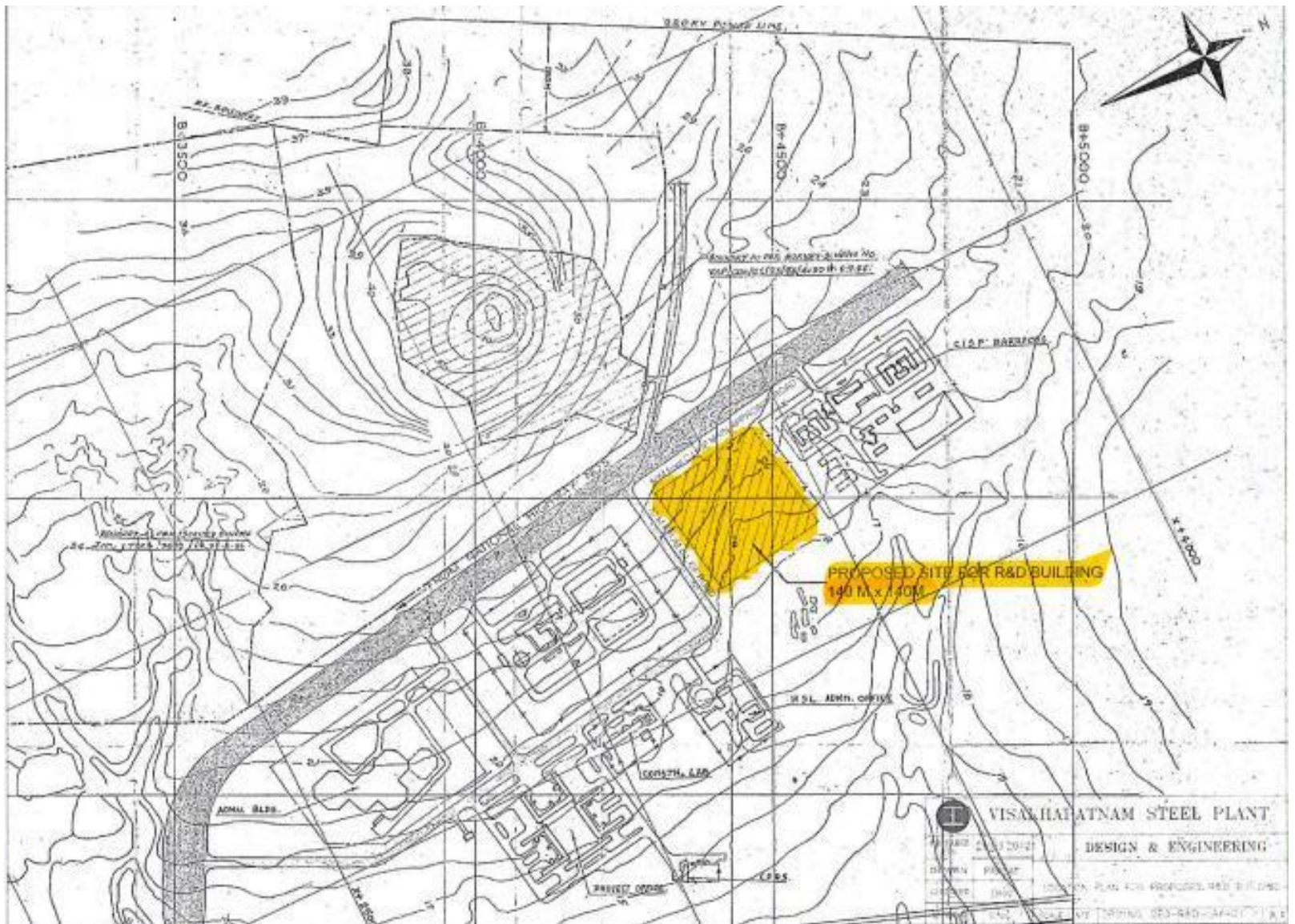
ARCHITECTURAL DESIGNING OF A R&D CENTRE AT VISAKHAPATNAM STEEL PLANT.

Research and Development centre undertakes R&D projects in diverse realms of Iron & Steel Technology under the categories of Plant Performance Improvement (PPI), Product Development (PD), Scientific Investigation and Development (SID), Basic Research (BR) and Technical Services (TS).

It provides customers with prompt, innovative and cost-effective R&D solutions; develop and commercialize improved processes and products; continually enhance the capability of its human resources to emerge as a centre of excellence. The major efforts are directed towards cost reduction, quality improvement and value-addition to products of plants and providing application engineering support to products at customers' end. It also takes initiatives to develop special steel products utilizing the modernized production facilities at steel plants.

- The plain land on which the R&D centre is located on Visakhapatnam Steel Plant nearby main road. Proposed site dimension for R&D building is 140m X 140m. The site plan with schematic drawing is attached.
- The R&D building shall be aesthetically pleasing and planned to construct with latest technology and green materials.
- The building shall be steel intensive green building with platinum rating.
- Local climatic conditions shall be considered in order to provide structure with thermal comfort and energy efficiency and economy.
- A centralized computer system is to be provided.
- Use of solar energy in the R&D building shall be explored for lighting of important places to save electrical energy.
- Proper location of Electrical Transformer, HVAC, Pump House, Sump, Septic Tank etc. shall be decided so that these will not create safety hazards to other facilities.
- Proper drainage arrangements in the open spaces of the R&D building shall also be made so that water do not stagnate. The underground drain connecting the main drains outside the plant shall be provided.
- For safety precautions all openings, electrical panels, proper enclosures shall be provided.
- Students can design as per schematic sketch or can provide their own arrangement without changing the outer dimensions and requirements of given projects.

SITE PLAN



Latitude: 17°38'35.57"N

Longitude: 83°10'8.40"E

DESIGN REQUIREMENT

Human Resources

- Manpower – Engineers/ Scientists – 150
-Technical Staff - 100

Laboratories (12-15 persons each)

- Microscopy Lab –
- Ceramic lab
- Process lab
- Material characterization lab
- Energy and environment lab
- Phase Transformation lab
- Computational lab
- Modelling and simulation lab
- Corrosion lab
- Advanced Process lab
- Advanced Materials Characterization lab

Pilot facilities (Catering total 50 staff members)

- Coke making
- Agglomeration & Iron Making
- Steel Making
- Raw material characterization & beneficiation
- Metal Forming
- Foundry, Welding etc

Technology Services (8-10 persons each)

- Planning and procurement cell
- Knowledge management cell
- Technology management cell
- IPR activities cell
- Administrative cell and F&A cell

Other facilities

- Library
- Conference Hall / Seminars Halls – Large 2 nos. 250 persons capacity each (Oval/Circular)
- Conference Hall small/ Meeting Room – Small 3 nos. 50 persons capacity each (Oval/Circular)
- Auditorium (two levels) Capacity – 1000 persons (600 lower level and 400 upper level) with stage, screen, two adjoining AC green rooms and adjoining foyer for arranging refreshments / food.
- CCTV Surveillance for entire building inside as well as outside
- Biometric system Plus smart card system for entry and exit of the employees / guests

- Provision of Utilities like air, water, nitrogen, hydrogen etc
- Compressor House
- Provision for Cafeteria
- Centralise AC system
- Water treatment plant
- Transformer
- Security

Finishing Jobs

- Storm water drainage (Boilers)
- Common utilities with BMD
- Sewerage recycling with zero discharge or with partial treatments
- Rainwater harvesting (direct holding and aquifer recharge)
- Electrical (smart with sensor)
- Fire Protection systems
- Use of solar energy, wind energy, geothermal systems and radiant cooling
- Compound walls
- Earthwork and Landscaping

The following mandatory features may be considered to achieve a LEED rating of PLATINUM Category from Indian Green Building Council (IGBC):

- Innovation and Design
- Location and Linkages
- Sustainable Sites
- Water Efficiency
- Energy and Atmosphere
- Materials and Resources
- Indoor Air Quality
- Awareness and Education

JUDGEMENT CRITERIA:

The submission would be graded according to the following criteria: -

1. The physical manifestation of the brief into the design – its form and functionality.
2. The innovative and judicious usage of Steel in the design.
3. The presentation of the said design – via. Drawings sheets (for both Zonal and Final Round, if selected) and physical model and 3D sketch-up model in software, walkthrough and PowerPoint presentation (for Final Round only, if selected).

GUIDELINES

- a. ***The proposed R&D Centre will be of international standards in its features, quality, aesthetics and visual impact.***
The Architects are free to evolve the Steel Structures having any suitable shape satisfying the basic requirements furnished in the Brochure.
- b. ***Larger column free areas inside the Structures are desirable.***

The following suggestion may be considered:

- a. One objective of the competition is to explain the basic concept of the design in an easy-to-understand way. Conceptual drawing may be used where necessary.
 - b. The proposed drawings of structures should be easy-to-understand visually (e.g. Features, quality, aesthetics and visual impact by colouring where necessary)
 - c. Students are free to evolve innovative ideas for the various aspects of the project but satisfying the basic requirements furnished in the Brochure
- 1.0 The following may be noted while working out the schemes:
- Innovative use of steel to the maximum extent in structural framing.
 - Use of steel elements in roofing, cladding, fascia, stairs, main entrance gates and other areas as far as possible along with other construction materials.
 - Use of Steel-Concrete Composite Structures may be proposed because it may be desirable to include RCC elements in some locations such as slabs etc.
- 2.0 Emphasis should be laid on design process and conception of innovative steel structures of various forms tempered with the practicality of putting the concept into reality along with Structural Stability.
- 3.0 Fire Safety/Lightning Protection norms are imperative. Encasement with concrete may not be adopted.
- 4.0 Detailed structural design and cost estimation / plumbing & sanitary design and auxiliary services design are outside the scope of the competition.

CODES AND REFERENCES

1. Use of Internet and recent publications for obtaining information on similar Structures worldwide is suggested. However, direct copying is prohibited. (Also refer rules under submission criteria in the announcement section)

The following codes and may be used for reference purpose:

- IS:800, IS:801, IS:806, IS:875, IS:1161, IS:1893, IS:4923, IS:9595, IS:11384 – the latest versions of these codes are to be referred.
- National Building Code-2016
- Participants are free to refer suitable Indian/ Foreign codes as applicable.

All submitted Entries will receive Participation Certificates.

STEEL ELEMENTS

All available Steel Elements may be used for the above purpose. These include:

- Steel Rolled Sections:
Standard Beam Sections / Wide / Narrow Parallel flange Beam Sections, Channel Sections / Angle Sections etc.
- Steel Fabricated / Built-up Sections / Castellated sections
- Rectangular Hollow Sections / Square Hollow Sections / Circular Hollow Sections
- Plates and Flats, Rounds and Squares
- Wire Ropes
- Cold Formed Steel
- Corrugated /Plain/ Embossed Profiled Sheet
- Colour Coated/ Plastic Coated/Galvanized Sheet
- Stainless Steel Sheet and Sections
- High Tensile Steel, Weather Resistant Steel etc

ENTRIES / APPLICATIONS

***Last date of sending Expression of Interest
– 30th September 2023***

***Last date of sending design entries
– 30th November 2023***

KEY POINTS FOR PARTICIPATION:

- To fill up the EOI in soft format, convert to PDF
- To take INSDAG's student's membership
- To email the EOI along with membership fees online by 30th September 2023 at insdagindia@gmail.com
- To Email the completed design entries by 30th November 2023 to the respective Zonal Coordinator & INSDAG .

REQUEST TO

Principals, Directors and HODs of all the Architectural Institutions.

This is a prestigious National Level Competition. This Brief may be assigned as a project / sessional work as a part of the curriculum of your students.

Themes of the Competitions (From 1999 to 2022):

- Centre for Performance of Arts at Kolkata;
- Sports cum Recreation Centre at Chennai;
- International Standard Shopping Plaza at Mumbai;
- World-class National Art Gallery at Banjara Hills, Hyderabad;
- International Cricket Stadium at Raipur, Chhattisgarh;
- International Airport Terminal Building at Vishakhapatnam;
- World-class Permanent Trade Fair Complex at Kolkata;
- World-class Railway Station in Rajasthan;
- 200 bedded Hospital at Burari, Kaushik Enclave, Delhi;
- World-Class Vehicle Terminus;
- Steel intensive village;
- Steel intensive Martyr Memorial;
- Steel intensive (B+G+4) Storeyed Office Building;
- (B+G+8) Storeyed super specialty hospital in Kolkata;
- Cultural Complex-cum-Spiritual Centre in any urban centre in India;
- Steel intensive Highway amenities centre;
- Tall Building(s);
- Elevated Cycle Track;
- International Airport proposed by AAI;
- Proposed International Level Cricket Stadium Cum Cricket Academy at Ghaziabad in India;
- 200 Bedded Hospital to be constructed in 100 days for Corona related Patients;
- Architectural Designing of an International Level School at Gurgaon;
- Architectural Designing of a Multi-Events Stadium at Kiriburu, Jharkhand;

Winning Colleges of the Competition (1999-2022)

Year	1st Prize	2nd Prizes	3rd Prizes
1999-2000	Anna University, Chennai	Rizvi College of Architecture, Mumbai Anna University, Chennai	SRM Engineering College, TN Jadavpur University, Kolkata
2000-01	LAD & SRP College, Nagpur	Priyadarshi College, Nagpur SRM College, Chengelpet	SRM College, Chengelpet SRM College, Chengelpet
2001-02	Academy of Architecture, Mumbai	Academy of Architecture, Mumbai Academy of Architecture, Mumbai	Anna University, Chennai Academy of Architecture, Mumbai
2002-03	Rizvi College of Architecture, Mumbai	Rizvi College of Architecture, Mumbai Dr. MGR Engineering College, Chennai	Dr. MGR Engineering College, Chennai Academy of Architecture, Mumbai
2003-04	TVB School of Habitat Studies, New Delhi	IIT Roorkee Measi Academy of Architecture, Chennai	LAD & SRP College, Nagpur Measi Academy of Architecture, Chennai
2004-05	IIT Roorkee	IIT Roorkee Dr. MGR Engineering College, Chennai	IIT Roorkee LAD & SRP College, Nagpur
2005-06	D Y Patil College of Arch, Pune	Anna University, Chennai Anna University, Chennai	IIT Roorkee Jadavpur University, Kolkata
2006-07	Anna University, Chennai	Anna University, Chennai Jadavpur University, Kolkata	Apeejay SAP, Noida IIT Roorkee
2007-08	Anna University, Chennai	Anna University, Chennai Anna University, Chennai	Anna University, Chennai Chitkara SPA, Patiala, Punjab
2008-09	School of Planning and Architecture, New Delhi	Measi Academy of Architecture, Chennai Measi Academy of Architecture, Chennai	Sathyabama University, Chennai Sathyabama University, Chennai
2009-10	VNIT, Nagpur (W-05)	Sathyabama University, Chennai (S-01) School of Planning and Architecture, New Delhi (N-04)	Bharati Vidyapeet College of Architecture, Pune (W-01) Jadavpur University, Kolkata (E-01)
2010-11	Measi Academy of Architecture, Chennai (S-09)	Jamia Millia Islamia, New Delhi (N-07) Sathyabama University, Chennai (S-07)	School of Planning and Architecture, Chennai (S-25), Jadavpur University, Kolkata (E-03)
2011-12	Measi Academy of Architecture, Chennai	School of Planning and Architecture, Chennai Jamia Millia Islamia, New Delhi	D C Patel School of Architecture, Gujarat, Measi Academy of Architecture, Chennai
2013	School of Planning and Architecture, Chennai	Birla Institute of Technology, Mesra Padmashree Dr D Y Patil Collge of Arch., Pune	Padmashree Dr D Y Patil Collge of Arch., Pune Measi Academy of Architecture, Chennai
2014	IIT Kharagpur	School of Architecture, MMU, Ambala, Haryana, IIT Kharagpur	VIT's Padmabhushan Dr. V.P. College of Arch., Pune Md. Sathak A J Academy of Architecture, Chennai
2015	IIT Kharagpur (E-09)	School of Architecture, MMU, Ambala, Haryana (N-01) IIT Kharagpur (E-07)	VIT's Pd. Dr. V.P. College.of Arch., Pune (W-21) Md. Sathak A J Academy of Arch., Chennai (S-42)
2016	BIT, Ranchi	Sunder Deep College of Architecture, Gaziabad, UP, MITS, Gwalior, MP	Sardar Vallabhbbhai Patel Inst. of Tech, Anand, Guj., IIT Kharagpur
2017	School of Planning and Arch, New Delhi	School of Planning and Arch, Chitkara, Punjab, M M School of Architecture, Ambala	Excel College of Arch. & Planning, Tamilnadu, Smt. M Mundle College of Arch., Nagpur
2018	School of Planning and Architecture, New Delhi	IIT Kharagpur School of Planning and Architecture, Chennai	Samata Mahajan of Chitkara University, Patiala, School of Planning and Architecture, New Delhi
2019	IIT Kharagpur (EA-05)	School of Planning and Architecture, New Delhi (NA-16) Rachana Sansad's Academy of Arch., Mumbai (WA-04)	Rachana Sansad's Academy of Arch., Mumbai (WA-03) School of Planning and Architecture, Bhopal (NA-10)
2020	Rachana Sansad's Academy of Arch., Mumbai (WA-02)	Rachana Sansad's Academy of Arch., Mumbai (WA-04) Piloo Modi School of Arch., Cuttack (EA-06)	Piloo Modi School of Arch., Cuttack (EA-05) Dr. Bhanuben Nanavati Coll. of Arch. for Women, Pune (WA-01)
2021	Measi Academy of Architecture, Chennai (SA-45)	IIT Kharagpur (EA-10) Rachana Sansad's Academy of Arch., Mumbai (WA-01)	Rachana Sansad's Academy of Arch., Mumbai (WA-03) RVS Padmavathy School of Archi., Chennai (SA-05)
2022	Rachana Sansad's Academy of Arch., Mumbai (WA-02)	IIT Roorkee (NA-20) Rachana Sansad's Academy of Arch., Mumbai (WA-03)	KIIT School of Arch. and Planning, Bhubaneswar (EA-06) IIT Kharagpur (EA-34)

For Communication Contact

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