

Training Program on SAP2000 and ETABs CSI Software Event Report

Event Details:

Organized by: Gujarat Technological University

Coordinated by: Department of Civil (Structural Engineering), Graduate School of Engineering and Technology

Program Coordinator: Dr. J. A. Amin, Professor, GSET, GTU

Program Execution Coordinator: Dr. J. A. Amin, Mr. Mridul Seth, Dr. K. M. Gondaliya

Experts/Speakers:

1. Mr. Vivek Prasad Rajagopalan
2. Mr. Lakshay Kumar

Date: 4th - 7th March, 2024

Daily Schedule of Training Program:

- Morning Session: 11:00 AM - 1:00 PM
- Lunch Break: 1:00 PM - 1:45 PM
- Afternoon Session: Post-lunch - 3:30 PM
- Tea Break: 3:30 PM
- Q&A Session: 4:00 PM - 5:00 PM

Venue: 328- Lab, Second floor, Block – 5, GSET, GTU, Ahmedabad – 382424.

Register students: 30

Appendices:

1. Participant List/Attendance
2. Speaker Profiles
3. Photographic Documentation of the Event

Overall Program Outcomes:

The SAP2000 & ETABs training program at Gujarat Technological University was a comprehensive initiative designed to enhance the structural engineering acumen of its participants. The event was successful in meeting its educational objectives, with tangible outcomes observed in participant engagement, skill development, and knowledge transfer.

Highlights of Event:

Date: March 4th, 2024

The Graduate School of Engineering and Technology at Gujarat Technological University proudly initiated its acclaimed training program on SAP2000 & ETABS, marking the beginning of a highly anticipated learning journey for students and professionals alike. The program, meticulously organized by the Department of Civil (Structural Engineering), was designed to provide an in-depth understanding of these two paramount structural analysis and design software tools.

The day was set into motion with the gracious welcome of the esteemed guest speakers, Mr. Vivek Prasad Rajagopalan and Mr. Lakshay Kumar, by the program coordinator, Dr. J. A. Amin, Professor at GSET, GTU. Their arrival was met with a warm reception, reflective of the respect and enthusiasm shared by all attendees.

Dr. Kaushik Gondaliya played a pivotal role throughout the day, coordinating the entire program seamlessly under the guidance of the program coordinator. His efforts ensured a smooth transition between the sessions and facilitated a conducive environment for learning and interaction.

The technical sessions commenced at 11 AM with Mr. Vivek Prasad leading the charge. He introduced the participants to the basic modeling techniques in ETABS with an eloquent and methodical approach. The morning was marked by a keen focus on the foundational aspects of the software, setting the stage for the advanced topics to follow.

Lunchtime provided a welcome break from 1 PM to 1:45 PM, allowing participants to engage in lively discussions and networking. It also served as an opportunity to interact informally with the guest speakers, thus enriching the learning experience.

Post-lunch, the workshop resumed with renewed energy, and a tea break at 3:30 PM offered another chance for the participants to rejuvenate and socialize. The concluding segment of the day, from 4 PM to 5 PM, was an interactive Q&A session. This was particularly beneficial as it addressed the specific queries of the participants, allowing for a deeper exploration of ETABS functionalities.

In conclusion, the first day of the training program was marked by a successful exchange of knowledge, spearheaded by the expert speakers. The participants left with valuable insights and a sense of anticipation for the continuation of the program. The stage is set for the upcoming sessions, promising to build upon the solid groundwork established on this inaugural day.

Key Learnings:

- Basic modelling approach in ETABS
- Introduction to structural analysis and design using ETABS
- Interactive Q&A session to address participant queries

Day 2: 5th March 2024

Session Highlights:

Day 2 of the training program was particularly instrumental in deepening the participants' practical knowledge of ETABS. Mr. Vivek Prasad Rajagopalan adeptly covered critical aspects of structural engineering under environmental loads, beginning with the analysis of seismic and wind loading on reinforced concrete frame buildings. The morning session was highly interactive, with practical demonstrations on ETABS, emphasizing real-world applications.

Post-lunch, the afternoon was devoted to an in-depth exploration of shear wall modeling and design. Participants were guided through the nuances of ETABS tools tailored for shear walls, which are vital for the integrity of high-rise structures in seismic zones.

Key Learnings:

- Advanced techniques for incorporating seismic and wind loads in structural models.
- Strategic approach to shear wall modeling in ETABS to enhance structural robustness.
- Expert tips on optimizing design parameters for safety and efficiency.

Assignment - I:

The final hour was allocated for Assignment-I, challenging participants to apply their newly acquired skills. This hands-on activity was aimed at reinforcing the day's lessons by having the participants perform independent analyses and design tasks on predefined structural models using ETABS.

Day 3: [6th March 2024]

Session Highlights:

The third day of the training program saw an escalation in the complexity and depth of the topics covered. The expertise of the speakers shone through as they navigated through advanced concepts and functionalities of ETABS with ease, ensuring that the participants could follow along and grasp the sophisticated features of the software.

The day's discourse delved into the realm of stiffness modifiers and their critical role in the accurate analysis of structural elements. Following this, a comprehensive session on flat slab design was conducted, where the intricacies of this common structural component were examined.

Expert-led tutorials on essential modeling tools were another highlight, with features like 'Cookie cut' and 'Align the joint' being thoroughly explained. The significance of drawing design strips for column edges and middle strips was underscored, providing clarity on the subject for all attendees.

Participants were introduced to the concepts of snaps and strip forces, furthering their ability to navigate and utilize ETABS for detailed structural design. The functionality of drawing section cuts was demonstrated, enabling a deeper understanding of internal force distributions and their implications on design.

Further discussions encompassed long-term time-dependent behavior of structures, floor cracking, and soil-structure interaction, covering aspects like raft foundations, soil profiles, and isolated footings. The practical applications of these sessions resonated well with the participants, many of whom were eager to see these concepts in action.

The day also touched upon the Section Designer and non-prismatic sections, wrapping up with an exploration into the design and analysis of beams and tendons. Each new topic was met with avid interest and inquisitive engagement from the participants.

Key Learnings:

- Application and impact of stiffness modifiers in structural modeling.
- Design and analysis strategies for flat slabs.
- Utilization of ETABS modeling tools for precision in structural design.
- Understanding of design strips, snaps, and strip forces.
- Deep dive into section cuts and their relevance in structural analysis.
- Exploration of time-dependent effects on structures and the significance of floor cracking.
- Soil-structure interaction with a focus on various foundation types.
- Use of Section Designer for custom sections and the specifics of non-prismatic sections.
- Theoretical and practical insights into beam and tendon analysis.

Day 4: [7th March 2024]

Session Highlights:

The culmination of the four-day training program on SAP2000 & ETABS was marked by a deep dive into the nonlinear characteristics of structural materials and advanced analysis methods. The expert addressed the nonlinear material properties of steel and concrete, essential for realistic and sophisticated structural modeling.

The participants engaged with complex analysis types, starting with pushover analysis. This session allowed them to understand the progressive failure and capacity of structures under seismic loading. Time history analysis was covered next, highlighting the dynamic response of structures under actual or synthetic ground motion records.

The expert then introduced incremental dynamic analysis (IDA), an advanced seismic performance assessment technique that helps in understanding the relationship between ground motion intensity and structural performance. This comprehensive session provided insights into the practical applications and interpretations of nonlinear analyses.

Key Learnings:

- Theoretical background and practical application of nonlinear material properties in structural analysis.
- Fundamentals of conducting pushover analysis in ETABS and interpreting the results.
- Step-by-step guidance on setting up and running time history analysis to assess structural responses.

- Introduction to incremental dynamic analysis and its role in seismic performance evaluation.

Closing Ceremony:

The training program was brought to a fitting end with a closing ceremony, where Dr. Jignesh Amin extended heartfelt thanks to the experts for their exceptional knowledge-sharing and commitment to the advancement of the attendees' education. He commended the speakers for their dedication and the clear impact of their instruction, reflected in the proficiency exhibited by the participants in their final assignments. Final thoughts were shared on the program's success and the way forward for the participants in applying their new skills.

Overall Participant Feedback:

The training program on SAP2000 & ETABS received an overwhelmingly positive response from the participants. The comprehensive nature of the course, which was adeptly segmented into four intensive days of learning, was highly praised. Participants noted the following key strengths:

1. Participants expressed that the training content was highly relevant to their academic and professional needs. The step-by-step progression from basic modeling techniques to advance nonlinear analysis ensured a thorough understanding of the software's capabilities. The practical examples and assignments were seen as highly beneficial for applying theoretical knowledge to real-world scenarios.
2. The expertise of Mr. Vivek Prasad Rajagopalan and Mr. Lakshay Kumar in structural engineering and their proficiency in ETABS was evident and much appreciated by the attendees. Their ability to simplify complex concepts and provide hands-on solutions was seen as a highlight of the program.
3. The interactive format of the sessions, particularly the Q&A and the dedicated time for assignments, was commended. Participants felt that these interactions facilitated a better understanding of the material and provided an opportunity to address specific questions and challenges.
4. The smooth running of the program was attributed to the effective organization and coordination by the GSET Civil Engineering Department. The structured scheduling and timely breaks were seen as contributing to a conducive learning environment.

However, participants also provided constructive feedback for future sessions:

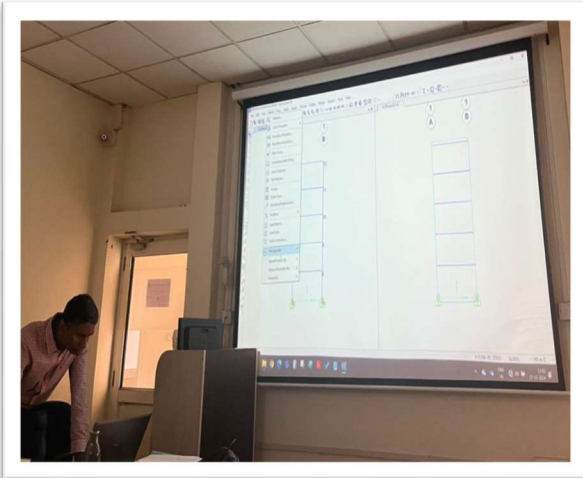
1. Some participants mentioned that certain sessions, especially those covering advanced topics, were quite intensive and could benefit from a slower pace to allow for more in-depth discussion.
2. A common request was for even more hands-on practice sessions or follow-up workshops to further solidify the knowledge gained, indicating a strong desire for practical experience.
3. Attendees expressed a wish for extended access to training materials and software (**Currently only 10 Number of software available for 20 students**) post-event to continue practicing the skills acquired during the training.

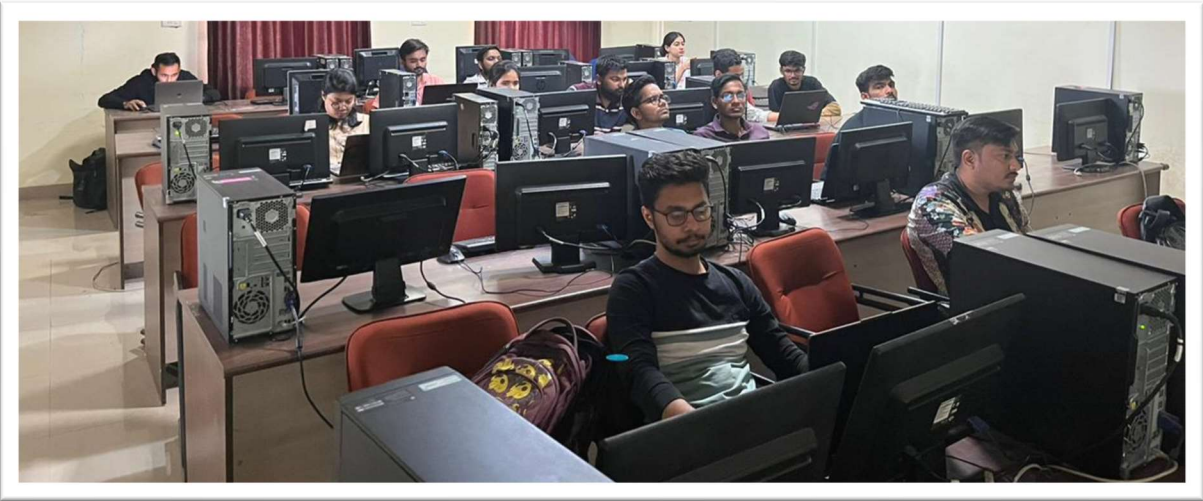
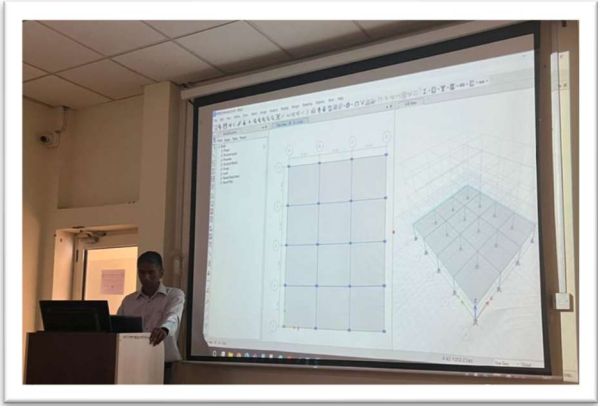
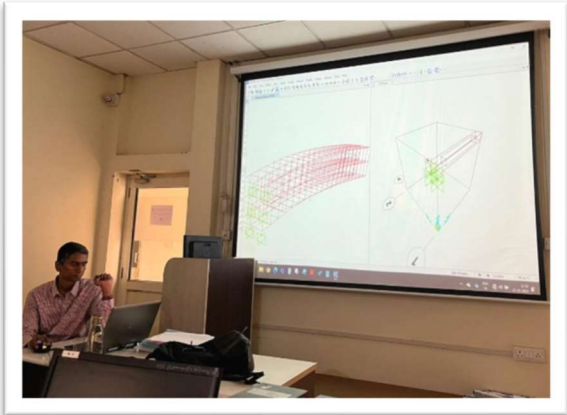
Overall, the sentiment was that the training was an enriching experience that significantly added to their educational and professional development, and participants were eager for continued learning opportunities in the future.

Closing Remarks:

The training program on SAP2000 & ETABS was a landmark educational event that successfully empowered a diverse group of participants with the latest tools and methodologies in structural engineering. The success of this program sets a precedent for future training initiatives, underlining the importance of continuous learning and professional development in the engineering domain.

Appendices-III Glimpse of CSI Software Training Program





Morning
Session

Registered Students CSI Training Program

GUJARAT TECHNOLOGICAL UNIVERSITY
GRADUATE SCHOOL OF ENGINEERING AND TECHNOLOGY
Student Attendance Sheet - CSI Training Program

Date 4 March 2024

Sr. No.	Name of Student	Organization	Sign
1	Rathod indravadansinh	GTU-GSET	
2	Kaushal Kumar Ajit Kumar Kadia	GTU-GSET	<i>Kaushal</i>
3	Saurav Bhatta Karmarkar	GTU-GSET	
4	Suthar Deep Narendrakumar	GTU-GSET	<i>Deep Suthar</i>
5	SINGH DEVANSHI ARVINDSINH	GSET-GTU	
6	Netra Modi	GSET	<i>N. Modi</i>
7	Neel Parmar	GSET - GTU	<i>Neel</i>
8	Vishwash Rukwal	Student GTU GSET	
9	Jay gohel	GTU GSET	<i>Jay</i>
10	Vyas Nikulbhai Bhikhubhai	GSET-GTU	<i>Nikul</i>
11	MAKAVANA MITANSHU NAVAGHANBHAI	Student	<i>Mitanshu</i>
12	Boda Jayen Navneetbhai	GTU- GSET	<i>Jayen</i>
13	Zahra chauhan	GTU-GSET	<i>Zahra</i>
14	Prajapati Gopi Karnaram	GSET GTU	<i>Gopi</i>
15	Bhesaniya Utsav Harishbhai	M.E structure	<i>Utsav</i>
16	Makwana Honey Sanjaybhai	Gset-Gtu	
17	KHATRI HARSHKUMAR KISHORKUMAR	GTU-GSET	<i>Harsh</i>
18	Anuja saha	GPRI	<i>Anuja</i>
19	Shreshth R Suthar	GTU-GSET	<i>Shreshth</i>
20	Darshil Arvindbhai Dhanani	Structural Engineering	<i>Darshil</i>
21	Vikani Darshan M.	GSET- GTU	<i>Darshan</i>
22	Modh Smit Vimalkumar	GSET	<i>Smit</i>
23	Balluwala Akbar MohammadHanif	Gtu Gset	
24	Singh Roshan Anshu Santosh Kumar	GSET-GTU	<i>Roshan</i>
25	Prajapati Dhaval Rajeshbhai	Gtu-Gset	<i>Dhaval</i>

Total: 19
[Signature]

Afternoon
Session

Registered Students CSI Training Program

GUJARAT TECHNOLOGICAL UNIVERSITY
GRADUATE SCHOOL OF ENGINEERING AND TECHNOLOGY
Student Attendance Sheet - CSI Training Program

Date 4 March 2024

Sr. No.	Name of Student	Organization	Sign
1	Rathod indravadsinh	GTU-GSET	
2	Kaushal Kumar Ajit Kumar Kadia	GTU-GSET	<i>Kaushal</i>
3	Saurav Bhatta Karmarkar	GTU-GSET	
4	Suthar Deep Narendrakumar	GTU-GSET	<i>DSuthar</i>
5	SINGH DEVANSHI ARVINDSINH	GSET-GTU	
6	Netra Modi	GSET	<i>N. Modi</i>
7	Neel Parmar	GSET - GTU	<i>Neel</i>
8	Vishwash Rukwal	Student GTU GSET	
9	Jay gohel	GTU GSET	<i>Jay</i>
10	Vyas Nikulbhai Bhikhubhai	GSET-GTU	
11	MAKAVANA MITANSHU NAVAGHANBHAI	Student	<i>Mitanshu</i>
12	Boda Jayen Navneetbhai	GTU- GSET	<i>Jayen</i>
13	Zahra chauhan	GTU-GSET	<i>Zahra</i>
14	Prajapati Gopi Karnaram	GSET GTU	<i>Gopi</i>
15	Bhesaniya Utsav Harishbhai	M.E structure	<i>Utsav</i>
16	Makwana Honey Sanjaybhai	Gset-Gtu	
17	KHATRI HARSHKUMAR KISHORKUMAR	GTU-GSET	<i>Harsh</i>
18	Anuja saha	GPRI	<i>Anuja</i>
19	Shreshth R Suthar	GTU-GSET	<i>Shreshth</i>
20	Darshil Arvindbhai Dhanani	Structural Engineering	<i>Darshil</i>
21	Vikani Darshan M.	GSET- GTU	<i>Darshan</i>
22	Modh Smit Vimalkumar	GSET	<i>Smit</i>
23	Balluwala Akbar MohammadHanif	Gtu Gset	
24	Singh Roshan Anshu Santosh Kumar	GSET-GTU	<i>Roshan</i>
25	Prajapati Dhaval Rajeshbhai	Gtu-Gset	<i>Dhaval</i>

Total: 18
[Signature]

GUJARAT TECHNOLOGICAL UNIVERSITY
GRADUATE SCHOOL OF ENGINEERING AND TECHNOLOGY
Student Attendance Sheet - CSI Training Program

Date 5 March 2024

Sr. No.	Name of Student	Organization	Sign
1	Rathod indravadansinh	GTU-GSET	
2	Kaushal Kumar Ajit Kumar Kadia	GTU-GSET	<i>Kadia</i>
3	Saurav Bhatta Karmarkar	GTU-GSET	<i>Saurav</i>
4	Suthar Deep Narendrakumar	GTU-GSET	<i>DSUTHAR</i>
5	SINGH DEVANSHI ARVINDSINH	GSET-GTU	
6	Netra Modi	GSET	<i>Netra</i>
7	Neel Parmar	GSET - GTU	<i>Neel</i>
8	Vishwash Rukwal	Student GTU GSET	
9	Jay gohel	GTU GSET	<i>Jay</i>
10	Vyas Nikulbhai Bhikhubhai	GSET-GTU	<i>Vyas N.B.</i>
11	MAKAVANA MITANSHU NAVAGHANBHAI	Student	
12	Boda Jayen Navneetbhai	GTU- GSET	<i>Jayen</i>
13	Zahra chauhan	GTU-GSET	
14	Prajapati Gopi Karnaram	GSET GTU	<i>Gopi</i>
15	Bhesaniya Utsav Harishbhai	M.E structure	<i>Utsav</i>
16	Makwana Honey Sanjaybhai	Gset-Gtu	
17	KHATRI HARSHKUMAR KISHORKUMAR	GTU-GSET	<i>Khatri</i>
18	Anuja saha	GPRI	
19	Shreshth R Suthar	GTU-GSET	<i>Shreshth</i>
20	Darshil Arvindbhai Dhanani	Structural Engineering	<i>Darshil</i>
21	Vikani Darshan M.	GSET- GTU	<i>Darshan</i>
22	Modh Smit Vimalkumar	GSET	<i>Smit</i>
23	Balluwala Akbar MohammadHanif	Gtu Gset	
24	Singh Roshan Anshu Santosh Kumar	GSET-GTU	<i>Roshan</i>
25	Prajapati Dhaval Rajeshbhai	Gtu-Gset	<i>Dhaval</i>

26 Rajgor rojesh b. GTU-GSET *Rojesh*

27 Rishabh chawda GTU - GSET *Rishabh*

28 Anandkumar Shreshth GTU - GSET *Anandkumar*

29 Dharmendra chopda GTU-GSET *Dharmendra*

30. Siddharthsinh Chauhan GTU-GSET *S. d. Chauhan*

31. Ahmad Bilal GTU - GSET *Ahmad*

GUJARAT TECHNOLOGICAL UNIVERSITY
GRADUATE SCHOOL OF ENGINEERING AND TECHNOLOGY
Student Attendance Sheet - CSI Training Program

Date 6 March 2024

Sr. No.	Name of Student	Organization	Sign
1	Rathod indravadansinh	GTU-GSET	I.B. Rathod
2	Kaushal Kumar Ajit Kumar Kadia	GTU-GSET	Kaushal
3	Saurav Bhatta Karmarkar	GTU-GSET	Saurav
4	Suthar Deep Narendrakumar	GTU-GSET	Deep
5	SINGH DEVANSHI ARVINDSINH	GSET-GTU	Arvind
6	Netra Modi	GSET	Netra
7	Neel Parmar	GSET - GTU	Neel
8	Vishwash Rukwal	Student GTU GSET	Vishwash
9	Jay gohel	GTU GSET	Jay
10	Vyas Nikulbhai Bhikhubhai	GSET-GTU	Nikul
11	MAKAVANA MITANSHU NAVAGHANBHAI	Student	Mitanshu
12	Boda Jayen Navneetbhai	GTU- GSET	Jayen
13	Zahra chauhan	GTU-GSET	Zahra
14	Prajapati Gopi Karnaram	GSET GTU	Gopi
15	Bhesaniya Utsav Harishbhai	M.E structure	Utsav
16	Makwana Honey Sanjaybhai	Gset-Gtu	Honey
17	KHATRI HARSHKUMAR KISHORKUMAR	GTU-GSET	Harsh
18	Anuja saha	GPRI	Anuja
19	Shreshth R Suthar	GTU-GSET	Shreshth
20	Darshil Arvindbhai Dhanani	Structural Engineering	Darshil
21	Vikani Darshan M.	GSET- GTU	Darshan
22	Modh Smit Vimalkumar	GSET	Smit
23	Balluwala Akbar MohammadHanif	Gtu Gset	Akbar
24	Singh Roshan Anshu Santosh Kumar	GSET-GTU	Roshan
25	Prajapati Dhaval Rajeshbhai	Gtu-Gset	Dhaval
26.	Dharmendra chopda	GTU-GSET	D.R.Chandey
27.	Anantaram shensim	GTU-GSET	Anantaram
28	chawda Rishabh	GTU-GSET	Rishabh
29	Rajgor Jogesh	GTU-GSET	Jogesh
30	Ahmad Bilal	GTU-GSET	Ahmad
31	Darji Sahil	GTU-GSET	Sahil
32	Darji Neel	GTU-GSET	Neel
33	Raziq Samimi	GTU-GSET	Raziq

**GUJARAT TECHNOLOGICAL UNIVERSITY
GRADUATE SCHOOL OF ENGINEERING AND TECHNOLOGY
Student Attendance Sheet - CSI Training Program**

Date 7 March 2024

Sr. No.	Name of Student	Organization	Sign
1	Rathod indravadansinh	GTU-GSET	<i>T.B. Rathod</i>
2	Kaushal Kumar Ajit Kumar Kadia	GTU-GSET	<i>Kaushal</i>
3	Saurav Bhatta Karmarkar	GTU-GSET	
4	Suthar Deep Narendrakumar	GTU-GSET	<i>TV Suthar</i>
5	SINGH DEVANSHI ARVINDSINH	GSET-GTU	
6	Netra Modi	GSET	<i>Netra</i>
7	Neel Parmar	GSET - GTU	<i>Neel</i>
8	Vishwash Rukwal	Student GTU GSET	
9	Jay gohel	GTU GSET	
10	Vyas Nikulbhai Bhikhubhai	GSET-GTU	<i>Vyas NB</i>
11	MAKAVANA MITANSHU NAVAGHANBHAI	Student	<i>Mitanshu</i>
12	Boda Jayen Navneetbhai	GTU- GSET	<i>Jayen</i>
13	Zahra chauhan	GTU-GSET	
14	Prajapati Gopi Karnaram	GSET GTU	<i>Gopi</i>
15	Bhesaniya Utsav Harishbhai	M.E structure	<i>Utsav</i>
16	Makwana Honey Sanjaybhai	Gset-Gtu	
17	KHATRI HARSHKUMAR KISHORKUMAR	GTU-GSET	
18	Anuja saha	GPRI	
19	Shreshth R Suthar	GTU-GSET	<i>Shreshth</i>
20	Darshil Arvindbhai Dhanani	Structural Engineering	<i>Darshil</i>
21	Vikani Darshan M.	GSET- GTU	<i>Darshan</i>
22	Modh Smit Vimalkumar	GSET	<i>Smit</i>
23	Balluwala Akbar MohammadHanif	Gtu Gset	
24	Singh Roshan Anshu Santosh Kumar	GSET-GTU	<i>Roshan</i>
25	Prajapati Dhaval Rajeshbhai	Gtu-Gset	

26 Daryaji Neel p

GTU-GSET

Neel

27 chopda dharmendra .R

GTU-GSET

D.R. Chopda

28 Anshum shensin

GTU-GSET

Anshum

29 Rishabh chawda

GTU-GSET

Rishabh

30 Rajgor Jogesh

GTU-GSET

Jogesh

31 Ahmad Bilal

GTU-GSET

Ahmad

32 Raziq Samina

GTU-GSET

Raziq

33 Darji Sahit

GTU-GSET

Darji

Vivek Prasad R

Senior Structural Engineer,

CSI Engineering Software Pvt. Ltd.

E-169, Lower Ground Floor, Greater Kailash -III, Masjid Moth, New Delhi – 110048

PROFESSIONAL SUMMARY

Analytical and industrious Structural Engineer with over 16 years of experience in structural engineering and overall, 19 years in the field of civil engineering which includes construction, structural design, software training, technical support, development, and other related activities.

Currently working with CSI, joined after completing his BE., in 2007. Has trained faculties, students, and professionals on our software tools at various organizations like DRDO, BARC-IGCAR, NITTTR, CPWD, universities and colleges and practicing engineers. Provided technical support to users across India and involved in software development.

ACADEMIC CREDENTIALS

Master of Technology in Structural Engineering (2014)

Indian Institute of Technology (IIT) Delhi, New Delhi.

Bachelor of Engineering in Civil Engineering (2007) Anna

University, Chennai.

Diploma in Civil Engineering (2000)

State Board of Technical Education and Training, Chennai.

Gujarat Technological University
Graduate School of Engineering and Technology
Assignment-I

Duration: 1 Hour

Date: 5 March 4, 2024

Q-1. Analyze and design the RC frame building using any Software. (a) Considering provision of IS 13920 (b) without considering provision of IS 13920

Details of Structure:

Floor Plan: The typical floor plan of framed structure is shown in Fig.1

No. of storey = 5

Slab thickness = 150 mm (RCC).

Brick masonry = 230 mm thick wall on periphery of the building.

Location of building: out skirt of Ahmadabad.

Type of soil= Medium

Choose appropriate sizes of beam, and column.

Loading on structure:

Dead Load: Roof finish = 1.75 kN/m^2

Floor finish = 1 kN/m^2

Live Load: Roof = 2 kN/m^2

Floor = 5 kN/m^2

Study the following aspects:

- (1) Frequency, time period and mode shapes of different modes. Compare time period with IS: 1893 specified time period.
- (2) Comparison earthquake force as obtained from software and IS:1893 specified value
- (3) Calculate static and dynamic wind force as per IS: 875(III) at different storey level and compare with seismic forces.
- (4) Shear force, bending moment and axial force for various loads and their combinations.
- (5) Approximate check of results obtained
- (6) Deflected shape of building, drift at various floor level and its variation with change in beam and column sizes. Observe deflected shape through animation.
- (7) Design of beam, column and foundation.

Present the comparison of results in graphical form.

Prepare detailed design report including basic data of building, loading, analysis results, and design of members and detailing.

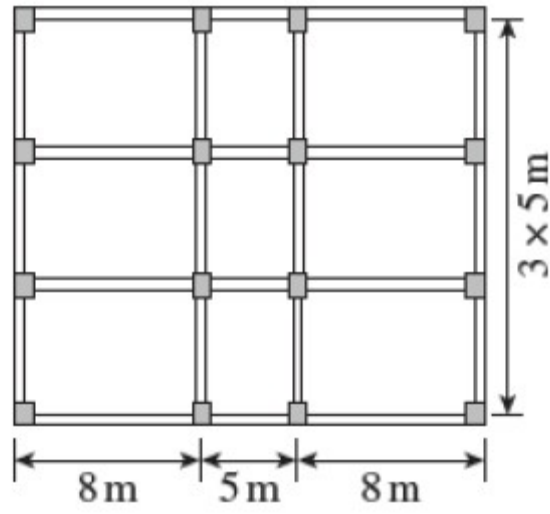


Fig. Typical floor plan layout