

EARTHQUAKE RESISTANT DESIGN

From Theory to Practice

ONLINE COURSE ID : EQ-STR-001

Contact : earthquake@sqveconsultants.com

INTRODUCTION

The engineering profession is growing and the knowledge base increasing with each day, it is difficult to track all the developments by a unilateral approach. The implementation of current code of practices has multi-dimensional considerations which the practicing engineers may not be aware about. The software we are using is approving the pace with which the earthquake engineering has escalated. A global seismic design practice is not far away, and many developments are being planned. The revisions in IS 1893 (Part 1) : 2016 & IS 13920 : 2016 generated few practical difficulties. Recently, the amendments have been issued for both the codes. For design of tall buildings, new code IS 16700 was published in 2017. For appropriate implementation of these codes, it is required to understand different clauses of the code as well as how to operate the same in the software. It is utmost important to know the functioning of the software. To address such practical difficulties and for discussion related to possible solutions, the online course EQ-STR-001 is launched.

The course will focus on earthquake resistant analysis and design as **per IS 1893 (Part 1) : 2016, IS 13920 : 2016 & IS 16700 : 2017**. The course will cover discussion on important clauses of the code as well as application of same in the **software**. The course will cover the **important areas** like time period estimation, handling of different irregularities, vertical earthquake, ductile detailing, back stay analysis, stiffness modifiers, torsional mode, etc.

WHAT IS UNIQUE ABOUT THIS COURSE?

The course will cover important aspects related to earthquake resistant design with **focus on the difficulties** faced by the practicing engineers in seismic analysis and design of structures. The course is framed in a manner to exercise with the problem and discuss the **possible solutions**. The course is **designed by the experienced engineers** who have together more than three decades of experience in the field of structural engineering.

- ⇒ The entire course is designed from the **practical aspects** which can be readily used in the real projects. The **discussions** will be unique and implementable.
- ⇒ The potential of **ETABS software** in earthquake resistant design and understanding of the important clauses of the IS codes will be carried out through practical sessions using the small study models.
- ⇒ The study **models will be specifically made by us** to elaborate the problem and show the outcomes with and without implementation of the IS clauses.
- ⇒ The tutorial and handouts will be given to the participant during each session so that they get the **hands-on experience** related to the subject.
- ⇒ The course is designed to have an **interactive mode** so that the problems / doubts of the participants can be addressed.
- ⇒ **Certificate** will be issued on successful completion of the online course (minimum 80% attendance is required).
- ⇒ **Recording** will be shared with the all-registered participants for future reference.

WHO SHOULD ATTEND?

This course will be useful for following :

- ⇒ Practicing Structural Consultants
- ⇒ Senior Structural Engineers in the company having experience around 10+ years
- ⇒ Structural engineer having 5+ years of experience
- ⇒ Young structural engineers having less than 3 years of experience
- ⇒ Post Graduate students in Structural Engineering
- ⇒ Civil engineering students who are interested in Structural Engineering.
- ⇒ Disaster/Academic professionals involved in earthquake related aspects.

COURSE FACULTY

Bhavin Shah – Founder & CEO, SQVe Consultants



Mr. Bhavin Shah is passionate about Engineering profession with two decades of experience. He is having a dream for enhancing the engineering profession in different organisations. He completed graduation in Civil Engineering and Masters in Structures from Sardar Patel University. He is having unique experience of working in the specialized firm of civil / structural consultancy which grew as multidisciplinary firm (VMS), large multidisciplinary firm (L&T Chiyoda Ltd.) and owner-based engineering set up (Adani Infra (I) Ltd.). He worked in different organisations at different levels, starting from junior design engineer to CEO. He is Founder & CEO of **SQVe Consultants**. He is pursuing Ph.D. in Structural Engineering related to earthquake resistant design of industrial structures.

Bhushan M. Raisinghani – Founder & Trainer, Seismic Karyashala



Mr. Bhushan Raisinghani is a young research-based engineering professional with more than a decade of experience. He has a passion to excel in the domain of earthquake resistant analysis and design of buildings along with developing a training framework to improve the knowledge base of young practicing engineers. He has done his B.Tech (Civil) and M.Tech (by Research) in Earthquake Resistant Design from Nirma University. He has served various organizations and has been involved in design, administration and teaching. He has published ten research papers on the subject of Performance Based Design of RC Buildings in Indian context. He has attended many capacity building sessions on CED38-39 implementation. He is an active blogger and lifelong researcher. He is currently involved with **NIDM** to improve the reconstruction after the disaster.

METHODOLOGY

- ⇒ The entire course is designed in the **ONLINE** mode.
- ⇒ The course will spread over **five weeks** with **approximate 20+ contact hours**.
- ⇒ The software and the clauses will be **explained step-by-step** to make participants understand the problems and the practical aspects in seismic design of structures.
- ⇒ During the course, the interaction can be done with faculty using **customised discussion forum**.
- ⇒ The **hands-on experience** through handouts and tutorials will give real time experience of problem solving in live sessions with the course faculties.
- ⇒ Five weeks are considered so that the participants have ample opportunities for raising their **doubts / queries** related to the subject.
- ⇒ The online sessions will be conducted using **ZOOM software**.

COURSE SCHEDULE AND FEES**

Start Date	7 th Aug 2021
End Date	5 th Sep 2021
Total contact hours	20+ (Sessions will be arranged on weekends. Please refer the following page for details.)
Cost per participant	Cost per participant shall be 8000 INR (inclusive of 18% GST).

****Discount offered:**

- 1) **For continuous learner**: If you have attended earlier one course of SQVe Consultants than **5%** of discount will be offered. For prior two courses, **10%** of discount will be offered. For three or more prior courses, **15%** of discount will be offered.
- 2) **Group participation** from a company or institute is encouraged to get the discounts on this course. For more details, pl contact us at : earthquake@sqveconsultants.com

HOW TO REGISTER FOR THE COURSE?

1. Please click on the following link:
<https://sqveconsultants.com/eq-str-001/>
2. Click on "**Register Now**" button at bottom of the page
3. You will be directed to the payment page.
4. For group registration and discount, please contact us. We will share an invoice and the payment details separately.

Kindly note that there are limited seats. Your any queries/ doubts related to the course shall be addressed to the email address : earthquake@sqveconsultants.com

SCHEDULE OF THE COURSE : EQ-STR-001

Session No.	Details	Time	Date	Week
1	Model creation in ETABS : definition of material and section properties, draw tools for building elements.	17:00 – 18:00 Hrs	7-Aug-21 (Sat)	1
2	Lateral load analysis of a framed structure : static and dynamic methods	18:00 – 19:00 Hrs		
3	Time period estimate for RC building in ETABS : Program calculated and empirical formula	11:00 – 12:00 Hrs	8-Aug-21 (Sun)	
4	Scaled and unscaled response spectrum analysis for a building : Drift checks as per IS 1893 2016	12:00 – 13:00 Hrs		
5	Analysis using stiffness modifiers of IS 1893 2016 and IS 16700 2017 : change in analysis results and the behaviour	17:00 – 18:00 Hrs	14-Aug-21 (Sat)	2
6	Vertical earthquake in ETABS : load combinations for design and serviceability	18:00 – 19:00 Hrs		
7	Strong column - weak beam analogy as per IS 13920 2016 : effects on the frame and wall structures	11:00 – 12:30 Hrs	15-Aug-21 (Sun)	
8	Analysis using max. column width clause of IS 13920 2016 : design significance	12:30 – 13:15 Hrs		
9	Earthquake performance under torsional mode : minimum eccentricity, torsion force and torsional mode.	17:00 – 19:00 Hrs	21-Aug-21 (Sat)	3
10	Analysis for minimum shear wall area in plan as per IS 13920 2016 : estimating its need for the building	11:00 – 12:00 Hr	22-Aug-21 (Sun)	
11	Analysis using the minimum stirrup area of IS 13920 2016 : importance of ductile detailing with this clause	12:00 – 13:00 Hrs		
12	Modelling of infills and soft storey effects : solutions for the modern materials (AAC)	17:00 – 18:00 Hrs	28-Aug-21 (Sat)	4
13	Analysis using rigid and flexible diaphragms : behaviour, design and performance	18:00 – 19:00 Hrs		
14	Effect of basement mass in dynamic analysis of buildings : changes in behaviour and loading	11:00 – 12:00 Hrs	29-Aug-21 (Sun)	
15	P-Delta analysis of RC building in ETABS : load combinations and the implications in design	12:00 – 13:30 Hrs		
16	Effects of the irregularities due to mass in structures : technological and building structures	17:00 – 18:00 Hrs	4-Sep-21 (Sat)	5
17	Analysis for backstay effects for RC buildings : design and detailing needs	18:00 – 19:30 Hrs		
18	Short quiz and open discussion.	11:00 – 13:00 Hrs	5-Sep-21 (Sun)	

About SQVe Consultants

SQVe Consultants is a recently established innovative company with a vision of enhancing the engineering profession. The name of the company is derived from first letters of goals of engineering, i.e. Schedule adherence, Quality assurance & Ve -Value Engineering.

Our ALL services are designed to have maximum of ONLINE interaction with the least OFFLINE interaction.

We look forward for long term association with different organisations for enhancement of engineering profession through our unique services.

For more details, please refer website : <https://sqveconsultants.com>

You may contact us at email address : contact@sqveconsultants.com

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