



**Bhavin Shah** 

## STEEL-STR-001 ONLINE COURSE

4th batch

# DECODE IS 800 : 2007

## ALONG WITH

# SOFTWARE

(STAAD.Pro & ETABS)

Time : 8:30 PM TO 10:00 PM IST 26-OCT-23 T0

21-NOV-23

Link : https://sqveconsultants.com/steel-str-001 Email : steel@sqveconsultants.com



### **INTRODUCTION**

For design of steel structures, IS 800:2007 was published before ~13 years but still there are many practical difficulties related to implementation of the IS code. It is not a conventional revision of the code as there is complete change in design philosophy from working stress design method to limit state design method. There are practical difficulties since commentary on the code along with practical examples are not available. Also, there are certain gaps between the latest IS code and the current popular software.

It is heard from few engineers that the tonnage we get from the design using IS 800:2007 is higher than the earlier code. Also, there is no confidence in the group of engineers while designing the structure using limit state design method. Hence, they are cross checking results with the working stress method since the software is having both the options.

These kinds of scenarios have prompted us to launch a unique course: **STEEL-STR-001** (Decode IS 800:2007 along with the software). After successful completion of three batches of the course, we have received many requests for relaunching the course. Accordingly, **4th batch** of the course will commence from **26-OCT-23**.

The course will cover discussion on important clauses of the code as well as application of same in the software, STAAD.Pro, RAM connection & ETABS. The course will cover the important areas such as <u>possibilities of cost optimisation</u>, second order elastic analysis, plastic analysis, elastic buckling load factor, moment amplification factors, effective length calculations, different limit states, block shear, lateral torsional buckling, connection design, earthquake resistant design, etc.

## WHO SHOULD ATTEND?

This course will be useful for following :

- ✓ Practicing Structural Consultants
- ✓ PEB design engineers
- ✓ Owner's consultant
- ✓ Proof checking consultants
- ✓ Senior Structural Engineers in the company
- ✓ Junior Structural Engineers in the company
- ✓ Civil/structural engineers who do not have prior exposure of steel structures and want to learn from first fundamental
- ✓ Post Graduate students in Structural Engineering
- ✓ Civil engineering students who are interested in Structural Engineering.

### WHAT IS UNIQUE ABOUT THIS COURSE?

The course is designed by the **experienced engineer** (Mr. Bhavin Shah) who have more than two 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 course is designed to have an interactive mode so that the problems / doubts of the participants can be addressed effectively.
- ✓ A WhatsApp group will be created for **quick communication** between the participants and the faculty. The participants will be able to share the discussion points, doubts, queries, etc. in the group. The details in the group will be collated for further discussion in the next sessions.
- ✓ All the sessions will be recorded and recording of each session will be shared within few hours. If someone miss out the live session then he/she can go through the recording before attending the next session. The participants can share the doubts/queries in the WhatsApp group, after going through the recording which will be addressed in the next session.
- ✓ The important clauses of the IS code will be discussed along with the software, STAAD Pro, RAM connection & ETABS.
- ✓ **Recording** will be available with all the participants for **180 days**.
- ✓ Certificate will be issued on successful completion of the online course (minimum 80% attendance is required.).
- ✓ The course is designed as a **process of learning together**.

## **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 steel structures.



#### **METHODOLOGY**

- ✓ The entire course is designed in the **ONLINE mode**.
- ✓ The course will have **approximate 22+ contact hours**.
- ✓ During one month of a time, the interaction can be done with faculty and the participants using WhatsApp.
- ✓ Participants will be given the **exercises** to further strengthen their learning.
- ✓ The participants will be encouraged to share their real project problems during the course. We will discuss possible solutions for the same.
- ✓ Participants will have ample opportunities for raising their doubts / queries related to the subject.
- ✓ The online sessions will be conducted using **ZOOM** software.
- ✓ The course is designed as a **process of learning together**.

## **COURSE SCHEDULE**

Start Date	26-OCT-2023
End Date	21-NOV-2023
Total contact hours	22+ (Sessions will be arranged from Monday to Friday from 8:30 PM to 10:00 PM IST.)
Details of each session	Please refer subsequent page for details of each session.

#### **FEES FOR THE COURSE\*\***

For participant <u>from India</u>	Cost per participant shall be <b>9800 INR</b> (inclusive of 18% GST).
For participant <u>from outside India</u>	Cost per participant shall be <b>150 USD.</b>

#### \*\*Discount offered:

✓ 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. To avail the discount, please send us an email at : <u>steel@sqveconsultants.com</u>. We will arrange to send an invoice considering the discount for online payment.



✓ Group participation from a company or institute is encouraged to get the discounts on this course. For more details, pl contact us at the above mentioned email address.

### HOW TO REGISTER FOR THE COURSE?

Please click on the following link and thereafter click on "**Register Now**" button at bottom of the page. You will be directed to the **payment page**. Your registration will be confirmed after receipt of the payment at portal.

https://sqveconsultants.com/steel-str-001

#### Important notes:

The above payment gateway will accept card only. If you prefer other type of payments such as net banking, UPI, Goggle Pay, etc. then please message us. We will arrange details for the same.

Payment gateway at the above-mentioned portal is configured only for **Indian participants**. Interested foreign engineers can contact us at the email address : earthquake@sqveconsultants.com. An invoice will be shared through **PayPal or Stripe** for online payment.

#### Kindly note that there are limited seats.

Your any queries/ doubts related to the course shall be addressed to the above mentioned email address.

### **SCHEDULE OF THE COURSE : STEEL-STR-001**

Session no.	Brief details	Date	Time (IST)
1	<ul> <li>Overview of IS 800:2007 &amp; Changes made in NBC 2016 with reference to</li> <li>IS 800:2007 <ul> <li>Latest document for design of steel structures</li> <li>Major changes in NBC 2016</li> <li>Overview of IS 800:2007</li> <li>Introduction to IS 18168:2023, etc.</li> </ul> </li> </ul>	26-OCT-23	8:30 PM TO 10:00 PM



Session no.	Brief details	Date	Time (IST)
2	<ul> <li>Second order elastic analysis, Elastic buckling load factor as per IS 800:2007 and software <ul> <li>Importance of stability concepts for steel structures</li> <li>When it is required to perform buckling analysis?</li> <li>What is buckling load factor?</li> <li>Manual calculations for buckling load factor</li> <li>How to perform buckling analysis in the software?</li> <li>P-Delta analysis</li> <li>Comparison of results of buckling analysis from STAAD Pro and ETABS, etc.</li> </ul></li></ul>	27-OCT-23	8:30 PM TO 10:00 PM
3	<ul> <li>Plastic analysis as per IS 800:2007 and software</li> <li>What is plastic analysis?</li> <li>When plastic analysis to be performed?</li> <li>What precautions to be taken while considering the plastic analysis?</li> <li>Brief of plastic hinge formation</li> <li>Redundancies due to plastic hinges</li> <li>Study model in ETABS showing the concept of plastic analysis, etc.</li> </ul>	30-OCT-23	8:30 PM TO 10:00 PM
4	<ul> <li>Design of tension member as per</li> <li>IS 800:2007 and software <ul> <li>Important provisions in IS code for design of tension members</li> <li>Different limit states such as yielding, rupture, block shear, etc.</li> <li>Design of tension member using manual calculations</li> <li>Design parameters in the software</li> <li>Design of tension member using STAAD Pro and ETABS software</li> <li>Comparison of the results, etc.</li> </ul> </li> </ul>	31-OCT-23	8:30 PM TO 10:00 PM
5	<ul> <li>Design of compression member as per</li> <li>IS 800:2007 and software <ul> <li>Important provisions in IS code for design of compression members</li> <li>Limit state of flexural buckling</li> </ul> </li> </ul>	1-NOV-23	8:30 PM TO 10:00 PM



Session no.	Brief details	Date	Time (IST)
	<ul> <li>Concept of effective length</li> <li>Design of compression member using manual calculations</li> <li>Design parameters in the software</li> <li>Design of compression member using STAAD Pro and ETABS software</li> <li>Comparison of the results, etc.</li> </ul>		
6	<ul> <li>Design of member under bending as per IS 800:2007, Elastic flexural torsional buckling and software</li> <li>Important provisions in IS code for design of members for pure flexure</li> <li>Limit state of lateral torsional buckling</li> <li>Effective length for the member</li> <li>Design of member using manual calculations</li> <li>Design parameters in the software</li> <li>Design of member using STAAD Pro and ETABS software</li> <li>Comparison of the results, etc.</li> </ul>	2-NOV-23	8:30 PM TO 10:00 PM
7	<ul> <li>Design of member under axial compression + bending in both directions as per IS 800:2007 and software <ul> <li>Important provisions in IS code for design of members subjected to combined forces</li> <li>Axial force + Bending in one direction or biaxial bending</li> <li>Equivalent uniform moment factor</li> <li>Design parameters in the software</li> <li>Design of member using STAAD Pro and ETABS software</li> <li>Comparison of the results, etc.</li> </ul> </li> </ul>	3-NOV-23	8:30 PM TO 10:00 PM
8	<ul> <li>Design of connections as per IS 800:2007 – (Part 1)</li> <li>Important provisions in IS code for connection design</li> <li>Type of bolts (HSFG, Ordinary bolts)</li> <li>Type of welding</li> </ul>	6-NOV-23	8:30 PM TO 10:00 PM



Session no.	Brief details	Date	Time (IST)
	<ul> <li>Philosophy for connection design</li> <li>Minimum design action to be considered for the connection design, etc.</li> </ul>		
9	<ul> <li>Design of shear connections as per IS 800:2007 - (Part 2)</li> <li>Design of shear connections</li> <li>Different limit states to be considered</li> <li>Performing design of below mentioned connections in RAM connection software</li> <li>✓ Beam to column connection</li> <li>✓ Beam to beam connection</li> <li>✓ Bracing connection</li> <li>✓ Splice connection</li> <li>✓ Base plate connection, etc.</li> </ul>	7-NOV-23	8:30 PM TO 10:00 PM
10	<ul> <li>Design of connections as per</li> <li>IS 800:2007 - (Part 3)</li> <li>Design of moment connections</li> <li>Different limit states to be considered</li> <li>Performing design of below mentioned connections in RAM connection software</li> <li>✓ Beam to column connection</li> <li>✓ Requirements of different types of stiffeners</li> <li>✓ Splice connection</li> <li>✓ Base plate connection</li> <li>✓ Design of connections for tubular sections, etc.</li> </ul>	8-NOV-23	8:30 PM TO 10:00 PM
11	<ul> <li>Earthquake resistant design (Section 12) as per IS 800:2007 and software- (Part 1)</li> <li>Background of section 12</li> <li>General queries related to section 12</li> <li>Important clauses of section 12</li> <li>Changes made in NBC 2016 with reference to section 12</li> <li>Response spectrum analysis for the structure</li> <li>Do's and Don'ts in the software for response spectrum analysis, etc.</li> </ul>	9-NOV-23	8:30 PM TO 10:00 PM



Session no.	Brief details	Date	Time (IST)
12	<ul> <li>Earthquake resistant design (Section 12) vs IS 18168 : 2023 <ul> <li>Introduction to IS 18168:2023</li> <li>Discussions on important clauses of IS 18168:2023</li> <li>Conflicts between section 12 and the latest code IS 18168:2023</li> <li>Options available in the software for design of members and connections</li> <li>Impact on the connection design and member design with reference to IS 18168 : 2023</li> </ul> </li> </ul>	16-NOV-23	8:30 PM TO 10:00 PM
13	<ul> <li>Discussions on provisions related to Fatigue design, Fire resistant design &amp; Durability  </li> <li>Design of gantry girder <ul> <li>Brief about fatigue design</li> <li>Brief about fire resistant design</li> <li>Brief about durability of steel structures</li> <li>Design of gantry girder</li> </ul> </li> </ul>	17-NOV-23	8:30 PM TO 10:00 PM
14	<ul> <li>Case study – Design parameters &amp; interpretation of results for shed type of structure</li> <li>Overall approach to design of shed type of structure</li> <li>Importance of Stability concepts</li> <li>Preparing structural system</li> <li>Locations of bracings</li> <li>Preferred type of sections for different structural elements</li> <li>Brief about wind load on the structure</li> <li>Design parameters for strength and deflection</li> <li>Importance of P-Delta analysis</li> <li>Discussions on results, etc.</li> </ul>	20-NOV-23	8:30 PM TO 10:00 PM
15	<ul> <li>Case study – Design parameters &amp; interpretation of results for equipment supporting structure</li> <li>Overall approach to design of equipment supporting structure</li> <li>Importance of Stability concepts</li> <li>Preparing structural system</li> </ul>	21-NOV-23	8:30 PM TO 10:00 PM



Session no.	Brief details	Date	Time (IST)
	<ul> <li>Locations of bracings</li> <li>Preferred type of sections for different structural elements</li> <li>Brief about wind load on the structure</li> <li>Response spectrum analysis for seismic loads</li> <li>Importance of P-Delta analysis</li> <li>Design parameters</li> <li>Discussions on results, etc.</li> </ul> Balance queries from participants and way- forward.		

## **About SQVe Consultants**

**SQVe Consultants** (SQVe) is a recently established company with a vision of enhancing the engineering profession. Name of the company is derived from the first letters of major goals of engineering, i.e. **S**chedule adherence, **Q**uality assurance & **V**alue **e**ngineering. For success of any project, it is required that all these goals are considered simultaneously in the projects. However, in today's fast track projects, it is indeed difficult to address all the goals in the design engineering cycle simultaneously. We believe that for achieving these desired goals, there are many developmental activities (off-project) required in the organisations for continual improvement. Our all services are designed to assist different organizations to achieve the engineering goals. We intend to collaborate with the different organisations for long term basis and aim towards enhancing the engineering profession through our unique services. Our values are Innovation, Commitment & Integrity. Your partner for achieving engineering goals!

We also provide coaching/mentoring to the structural engineers through one-on-one sessions. Please get in touch with us for any requirements related to online training related to civil/structural engineering as well as in the area of people management.



For more details, please refer website : <u>https://sqveconsultants.com</u> You may contact us at email address : <u>contact@sqveconsultants.com</u>

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