

DESIGN OF STEEL STRUCTURES

NBCS 2026

PART C | SECTION 6(A)

ONLINE COURSE ID: STEEL-STR-009

Link: <https://sqveconsultants.com/steel-str-009>
email: steel@sqveconsultants.com

INTRODUCTION

The recently published **National Building Construction Standards (NBCS), Part C, Section 6(A)** incorporates significant changes to the provisions for the design of steel structures, with reference to the earlier provisions of **IS 800:2007**. These changes address several important aspects of structural steel design, reflecting further developments in design methodology, safety requirements, fabrication practices, and sustainability.

The revised document introduces important modifications relating to the tensile properties of structural steel products, temperature stress analysis, fire load, width-to-thickness limitations, second-order effects, earthquake-resistant design, bracing connections, fabrication procedures, cross-section buckling classification, and lateral-torsional buckling. It also introduces provisions for sustainable steel construction and detailed design requirements for corrugated web girders.

We understand that **IS 800 is also under revision and that the updated version, expected to be published as IS 800:2026, may incorporate revisions in line with the updated provisions of NBCS Part C, Section 6(A)**. In this evolving standards landscape, it is important for practising structural engineers to familiarise themselves with the latest published provisions and assess their implications for existing design practices, in-house procedures, and software-based design workflows.

With this objective, **SQVe presents STEEL-STR-009: Design of Steel Structures in Line with NBCS Part C, Section 6(A)**, an online course designed to facilitate a systematic understanding of the revised provisions and their practical implementation in structural steel design.

What Will Be Covered in This Course?

The course will focus on decoding and discussing the important clauses and provisions of NBCS Part C, Section 6(A), with particular emphasis on the significant changes introduced in the revised document. The discussions will examine the intent of the provisions, their engineering implications, and the aspects requiring particular attention during structural analysis, design, and checking.

The course will also address the implementation of the revised provisions in structural design software STAAD Pro & ETABS. Through selected numerical simulations and manual calculations, we will examine relevant software settings, study the generated output, and compare the results with the applicable requirements of the document. These exercises will help identify potential gaps in software implementation and highlight areas where design procedures, input parameters, interpretation of results, or verification practices may require review.

This course is designed to help practising structural engineers, consultants, design professionals, and young engineers understand the significant changes introduced in NBCS Part C, Section 6(A), and their implications for the analysis and design of steel structures. With a practical focus on clause-wise discussions, STAAD Pro & ETABS simulations, and critical evaluation of software-generated results, the course will help bridge the gap between understanding the revised provisions and implementing them in day-to-day design practice. It will also be beneficial for organizations intending to review and update their internal design procedures, working instructions, design checklists, standard practices, and software-related Do's & Don'ts in line with the updated provisions.

Detailed content of the training program is mentioned in **Annexure-A** of the brochure.

WHAT IS UNIQUE ABOUT THIS COURSE?

The course is designed and conducted by an experienced structural engineer (Mr. Bhavin Shah) who has 26 years 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 session.
- ✓ All the sessions will be **recorded** and recording of each session will be **uploaded at our online portal** next day. If someone misses a live session then he/she can go through the recording before attending the next session. After going through the recording, the participants can share their doubts/queries in the WhatsApp group, which will be addressed in the next session.
- ✓ **Recording** can be accessed by the participants for **180 days**.
- ✓ Certificate for participation will be issued on successful completion of the online course.
- ✓ The course is designed as a **process of learning together**.

WHO SHOULD ATTEND?

This course will be useful for following:

- ✓ **Practicing Structural Consultants**
- ✓ **Senior Structural Engineers in the company**
- ✓ **Junior Structural Engineers in the company**
- ✓ **Owner's consultants**
- ✓ **Proof checking consultants**
- ✓ **Research scholars, Academicians**
- ✓ **Post Graduate students in Structural Engineering**
- ✓ **Civil engineering students who are interested in Structural Engineering.**

COURSE FACULTY



Bhavin Shah – Founder & CEO, SQVe Consultants

Mr. Bhavin Shah is passionate about the engineering profession and has 26 years of overall experience. He has a vision of enhancing the engineering profession across different organisations. He completed his graduation in Civil Engineering and his Master's degree in Structural Engineering from Sardar Patel University. He has diverse experience working with a specialized civil/structural consultancy, a multidisciplinary organisation (VMS), a large multidisciplinary organisation (L&T Chiyoda Ltd.), and an owner-based engineering organisation (Adani Infra (I) Ltd.). He has worked in different organisations and at various levels, progressing from Junior Design Engineer to CEO. He is the Founder & CEO of **SQVe Consultants**.

METHODOLOGY

- ✓ The entire course is designed in the **ONLINE mode** with live sessions.
- ✓ The course will spread over ~**four weeks** with **approximate 27 contact hours**.
- ✓ During the program, the interaction can be done with faculty and the participants using **WhatsApp**.
- ✓ **Fundamentals and concepts** will be main focus of the course.
- ✓ The online sessions will be conducted using **ZOOM** software.

COURSE SCHEDULE

Start Date	26-NOV-26
End Date	21-DEC-26
Total contact hours	27 contact hours (Sessions will be arranged on Monday to Friday from 8:30 PM to 10:00 PM IST .)
Details of each session	Please refer Annexure A for details of each session.

FEES FOR THE COURSE**

For participant <u>from India</u>	Cost per participant shall be 14,500 INR (inclusive of 18% GST).
For participant from <u>outside India</u>	Cost per participant shall be 216 USD .

****Important notes:**

1. Discount offered:

- **For continuous learner:** If you have previously attended one SQVe course, a 5% discount will be offered. A 10% discount will be offered for two previous courses, and a 15% discount for three or more previous courses. To avail the discount, please send us an email at: steel@sqveconsultants.com. 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, please contact us at the above-mentioned email address.

2. Payment in installments:

- Participants have the option to pay the total applicable fees in **six monthly installments**. In this case, the total fee amount will increase by approximately **3%**. For example, if the applicable fee is ₹14,500, the monthly installment will be ₹2,490 (i.e., ₹2,490 × 6 = ₹14,940).
- To avail this facility, please drop a message at steel@sqveconsultants.com and mention your name, email address, WhatsApp number & city. We will create a **subscription plan through Razorpay** with an auto-pay feature.

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-009>

Important notes related to payment gateway:

- ⇒ At this payment gateway, discount and monthly installment options are not activated.
- ⇒ If you are eligible for the discount then, please connect with us through email: steel@sqveconsultants.com. We will create separate payment link for the same.
- ⇒ To opt for monthly installment payment option, please drop a message at steel@sqveconsultants.com and please mention your name, email address, WhatsApp number & city. We will create a **subscription plan through Razorpay** with an auto-pay feature.
- ⇒ Payment gateway at the above-mentioned portal is configured only for **Indian participants**. Interested foreign engineers can contact us at the email address: **steel@sqveconsultants.com**. An invoice will be shared through **PayPal** for online payment.

Kindly note that there are limited seats.

Any queries or doubts related to the online course are welcome at the above-mentioned email address.

ANNEXURE - A

CONTENT OF THE ONLINE COURSE

Session no.	Title	Date	Time (IST)
1	Discussion on NBCS Part C Section 6(A) • Overview of major changes with reference to IS 800:2007 • Important explanatory notes for users of the NBCS • List of reference standards • Terminology • Q & A	26-NOV-26	8:30 PM TO 10:00 PM
2	Discussion on NBCS Part C Section 6(A) • Convention for member axis • Mechanical properties of steel • Basis for design • Loads and forces • Fire load • Temperature effects • Load combinations • Classification of cross section • Types of elements • Q & A	27-NOV-26	8:30 PM TO 10:00 PM
3	Discussion on NBCS Part C Section 6(A) • Detailed discussion on Limiting Width to Thickness Ratio • Maximum value of effective slenderness ratio • Resistance to horizontal forces • Eccentrically placed loads • Expansion joints • Q & A	30-NOV-26	8:30 PM TO 10:00 PM
4	Discussion on NBCS Part C Section 6(A) • Methods of structural analysis • Basic assumptions in the design • Non-sway and sway frames • Span length, Imposed loads in buildings	1-DEC-26	8:30 PM TO 10:00 PM

Session no.	Title	Date	Time (IST)
	• Base stiffness • Horizontal Notional Loads • How to apply Horizontal Notional Loads in STAAD Pro & ETABS? • Q & A		
5	Discussion on NBCS Part C Section 6(A) • First Order Elastic Analysis • Plastic Analysis • Frame Buckling Analysis • Determination of Elastic Buckling Load Factor • How to perform Frame Buckling Analysis in software STAAD Pro & ETABS? • Consideration of Second Order Effects • Moment amplification vs Second order effects • How to perform second order elastic analysis in STAAD Pro? • Q & A	2-DEC-26	8:30 PM TO 10:00 PM
6	Discussion on NBCS Part C Section 6(A) • Limit state design Basis for design • Limit state of Strength & Limit state of Serviceability • Characteristic loads • Design strength • Partial safety factor for loads Load combinations • Partial safety factor for materials • Deflection Vibration Durability Fire • Q & A	3-DEC-26	8:30 PM TO 10:00 PM
7	Discussion on NBCS Part C Section 6(A) • Design of tension member • Yielding of the gross section • Rupture of critical section • Block shear • Design of tension member in STAAD Pro • Study of output from the software STAAD Pro & ETABS	4-DEC-26	8:30 PM TO 10:00 PM

Session no.	Title	Date	Time (IST)
	• Comparison with manual calculations • Q & A		
8	Discussion on NBCS Part C Section 6(A) • Design of compression member • Reduction factor for flexural buckling • Reduction factor for torsional and flexural buckling • Different buckling classes • Imperfection factor • Effective length for standard conditions • Effective length as per Annexure D • Buckling class of cross sections • Design of compression member using STAAD Pro & ETABS • Manual calculations • Assessment of software implementation and identification of potential gaps against the revised provisions • Q & A	7-DEC-26	8:30 PM TO 10:00 PM
9	Discussion on NBCS Part C Section 6(A) • Design of members subjected to bending • Laterally supported beam • Section with webs susceptible to shear buckling before yielding • Shear lag effects • Laterally unsupported beam • Imperfection parameter for lateral torsional buckling of beams • Moment gradient effect parameter • Q & A	8-DEC-26	8:30 PM TO 10:00 PM
10	Discussion on NBCS Part C Section 6(A) • Elastic lateral torsional buckling moment • Simply supported beam with uniform moment • Torsional constant • Effective length for lateral torsional buckling	9-DEC-26	8:30 PM TO 10:00 PM

Session no.	Title	Date	Time (IST)
	• Three factor formula for lateral torsional buckling • Design of member for bending in STAAD Pro & ETABS • Manual calculations • Assessment of software implementation and identification of potential gaps against the revised provisions • Q & A		
11	Discussion on NBCS Part C Section 6(A) • Design for shear • Nominal plastic shear resistance • Resistance to shear buckling • Simple post-critical method • Tension field method • Stiffened web panels End panels design • Beams and plate girders with solid webs • Stiffener design Intermediate transverse web stiffener Load carrying stiffener Bearing stiffener Torsion stiffener Diagonal stiffener Tension stiffener • Design of member subjected to shear using STAAD Pro & ETABS • Q & A	10-DEC-26	8:30 PM TO 10:00 PM
12	Discussion on NBCS Part C Section 6(A) • Members subjected to combined forces • Combined shear and bending • Combined axial force and bending moment • Interaction factors • Equivalent uniform moment factor • Design of member subjected to combined force using STAAD Pro & ETABS • Manual calculations • Assessment of software implementation and identification of potential gaps against the revised provisions • Q & A	11-DEC-26	8:30 PM TO 10:00 PM

Session no.	Title	Date	Time (IST)
13	Discussion on NBCS Part C Section 6(A) • Design of connections • Bearing type bolts • Friction grip type bolting • Welds and welding • Minimum design action on connection • Overview of connection design in RAM connection • Design of shear connection Moment connection • Assessment of software implementation and identification of potential gaps against the revised provisions • Q & A	14-DEC-26	8:30 PM TO 10:00 PM
14	Discussion on IS 18168:2023 • Scope of the document • Terminology • Materials Material strength uncertainty factors • Load combinations • Limiting width to thickness ratio s for compression element of earthquake resistant structures • P-Delta effect • Beams Bracings Columns • Beam-column joint • Column to beam strength ratio • Panel zone demand • Column base • Shear links • Special Moment Resisting Frames • Special Concentrically Braced Frames • Eccentrically Braced Frames • Manual calculations • Assessment of software implementation and identification of potential gaps against the revised provision • Q & A	15-DEC-26	8:30 PM TO 10:00 PM

Session no.	Title	Date	Time (IST)
15	Discussion on NBCS Part C Section 6(A) • Design and detailing for earthquake effects • Loads and Load combinations • Response reduction factor • Columns • Ordinary Concentrically Braced Frames • Special Concentrically Braced Frames • Ordinary Moment Frames • Special Moment Frames • Column bases • Industrial structures • Options available in STAAD Pro for earthquake resistant design • Assessment of software implementation and identification of potential gaps against the revised provisions • Q & A	16-DEC-26	8:30 PM TO 10:00 PM
16	Discussion on NBCS Part C Section 6(A) • Design for Fatigue • Thickness correction factor • Necessity for fatigue assessment • Partial safety factors • Detail category • Fatigue strength • Detail category classification for Group 1 Group 2 Group 3 Group 4 • Constant stress range Variable stress range • Durability • Environmental exposure conditions • Protection guide for steel work application • Q & A	17-DEC-26	8:30 PM TO 10:00 PM

Session no.	Title	Date	Time (IST)
17	Discussion on NBCS Part C Section 6(A) • Fire resistance • Fire resistance level • Period of structural adequacy • Variation of mechanical properties of steel with temperature • Limiting steel temperature • Temperature increase with time in unprotected members • Fire resistance rating • Sustainable steel construction • Principles of sustainable construction • Specification requirements from supply chain members • Sustainable design • Sustainable fabrication • Q & A	18-DEC-26	8:30 PM TO 10:00 PM
18	Discussion on NBCS Part C Section 6(A) • Fabrication and erection • Annexure G – Plate girders with corrugated web • Annexure H – General recommendations for steel work tenders and contracts • Balance queries from participants • Concluding remarks • Way forward • Q & A	21-DEC-26	8:30 PM TO 10:00 PM

ANNEXURE - B

About SQVe Consultants

SQVe Consultants (SQVe) is a company established 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 engineering. 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 look forward to a long term association with different organisations for enhancement of engineering profession through our following unique services.

- ✓ Training on customised areas as per specific requirements of the company
- ✓ Consultation on the areas related to structural engineering
- ✓ Induction training program for new joiners in the company
- ✓ Improvement in Quality Assurance of the company
- ✓ Development of unique software tools for structural engineers
- ✓ One-on-one training sessions for structural engineers, etc.

For more information, please get in touch with us for scheduling the free call to understand the details.

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

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

⇒ **Self-paced mode of learning (12 packages):**

Get access to 286 recorded sessions with 536 contact hours. Twelve specialized packages have been created from 16 unique online courses:

<https://sqveconsultants.com/recorded-sessions>

⇒ **SQVE-MV-ET-01: Structural model verification tool for ETABS**

Visit the link for 30 DAYS of free trial of the software:

<https://sqve-academy.thinkific.com/courses/sqve-mv-et-01>

⇒ **Get access to free e-books:**

1. Design of gravity columns:
https://sqve-academy.thinkific.com/products/digital_downloads/ebook-str-001
2. Comments on draft of IS 1893 (Part 4):
https://sqve-academy.thinkific.com/products/digital_downloads/ebook-str-002

⇒ **Get access to three e-books of Er. J. D. Buch:**

<https://sqve-academy.thinkific.com/courses/ebooks>

⇒ **Individual online courses (self-paced mode of learning):**

CS-STR-001: Design of composite structures Link for more details:

<https://sqveconsultants.com/cs-str-001>

RCC-STR-003: Foundation engineering (Part 1) Link for more details:

<https://sqveconsultants.com/rcc-str-003>

RCC-STR-002: Design of liquid retaining structures Link for more details:

<https://sqveconsultants.com/rcc-str-002>

ONG-STR-001: Design of Pipe-rack for oil & gas industry:

<https://sqveconsultants.com/ong-str-001>

DYN-STR-001: Design of machine foundations:

<https://sqveconsultants.com/dyn-str-001>

STEEL-STR-007: Design of PEB structure:

<https://sqveconsultants.com/steel-str-007>

STEEL-STR-008: Design of PEB structures with cranes:

<https://sqveconsultants.com/steel-str-008>

STEEL-STR-005: Design of steel structure as per American codes:

<https://sqveconsultants.com/steel-str-005>

STEEL-STR-006: Design of connections for steel structures:

<https://sqveconsultants.com/steel-str-006>

EQ-STR-004: Push-over analysis, P-delta analysis, Nonlinear dynamic analysis, Response spectrum analysis: <https://sqveconsultants.com/eq-str-004>

RCC-STR-001: Comparison of design results of RC between STAAD Pro, RCDC & ETABS:

<https://sqveconsultants.com/rcc-str-001>

Visit online store of SQVe Academy:

<https://sqve-academy.thinkific.com/collections>

Join our telegram group for technical discussion related to structural engineering (9K+ engineers): <https://t.me/structuralengineering1>

Link for joining WhatsApp community of SQVe Academy:

<https://chat.whatsapp.com/JHSph6kemaGJLMasodebhW>

Link showing playlist of member-only videos:

https://www.youtube.com/playlist?list=UUMOwkjEFL_gGDE6peoapW8Few

You are welcome to join the channel at following link:

https://www.youtube.com/channel/UCwkjEFL_gGDE6peoapW8Few/join

To decide appropriate online courses for your specific requirements, feel free to connect with us through email address: contact@sqveconsultants.com

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