

# Exploring Bentley STAAD.Pro

(CONNECT Edition, V22)

(4<sup>th</sup> Edition)

## **CADCIM Technologies**

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*To teachers, who make it possible to disseminate knowledge  
to enlighten the young and curious minds  
of our future generations*

*To students, who are dedicated to learning new technologies  
and making the world a better place to live in*

## **THANKS**

*To employees of CADCIM Technologies and  
Tickoo Institute of Emerging Technologies (TIET)  
for their valuable help*

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## Conversion Table

<b>Conversion Table-Metric/Imperial</b>			
	<b>Unit</b>	<b>Multiply By (Factor)</b>	<b>To Obtain</b>
<b>Length</b>	Inch	2.54	Centimeter
	Centimeter	0.393	Inch
	Feet	0.301	Meter
	Meter	3.281	Feet
	Kilometer	0.54	Nautical Mile
	Nautical Mile	1.852	Kilometer
	Feet	0.000304	Kilometer
<b>Weight and Mass</b>	Ounce	28.35	Gram
	Gram	0.0353	Ounce
	Pound	0.453	Kilogram
	Kilogram	2.205	Pounds
	Metric Ton	1.102	Ton
<b>Liquid Measures</b>	Fluid Ounce	0.0296	Liter
	Gallon	3.785	Liter
	Liter	0.264	Gallon
<b>Thrust / Pressure</b>	Pounds Force	4.448	Newton
	Newton	0.225	Pound
	Pound per square inch (psi)	6.895	KiloPascal
<b>Temperature</b>	Kelvin	1	Degree Celsius-273.15
	Degree Celsius	1.8	Degree Fahrenheit +32

# Preface

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## **STAAD.Pro CONNECT Edition**

STAAD.Pro CONNECT Edition, developed by Bentley Systems, is a powerful software used for structural analysis and design. It has various tools that help in modeling 2D and 3D models. These tools analyze and virtually design any type of structure. This enables the users to automate their tasks, and remove the tedious long procedures involved in the manual methods. STAAD.Pro is an effective tool for structural engineers and construction professionals.

STAAD.Pro has an extremely flexible modeling environment that helps in creating accurate models quickly and accurately. It supports broad ranges of Steel, Concrete, Aluminium, and Timber design codes. It is capable of analyzing any structure for static loads, dynamic response, soil-structure interaction, wind, earthquake, and moving loads. STAAD.Pro supports Bentley Rebar, AutoPipe, RAM Connection, STAAD.Foundation, and other software.

**Exploring Bentley STAAD.Pro CONNECT Edition, V22** is a comprehensive textbook that has been written to cater to the needs of the students and professionals. The chapters in this textbook are structured in a pedagogical sequence, which makes the learning process very simple and effective for both the novice as well as the advanced users of STAAD.Pro. In this textbook, the author explains in detail the procedure of creating 2D and 3D models, assigning material constants, assigning cross-section properties, assigning supports, defining different loads, performing analysis, viewing results, and preparing report. The chapters in the book are punctuated with tips and notes, wherever necessary, to make the concepts clear, thereby enabling the user to create his own innovative projects.

The highlight of this textbook is that each concept introduced in it is explained with the help of suitable examples to facilitate better understanding. The simple and lucid language used in this textbook makes it a ready reference for both the beginners and the intermediate users.

- **Concepts Explained with Examples**

The author has explained the concepts in detail with examples for better comprehension of the processes involved.

- **Tips and Notes**

The additional information related to topics is provided to the users in the form of tips and notes.

- **Learning Objectives**

The first page of every chapter summarizes the topics that are covered in that chapter.

- **Self-Evaluation Test and Review Questions**

Every chapter ends with Self-Evaluation Test so that the users can assess their knowledge of the chapter. The answers to Self-Evaluation Test are given at the end of the chapter. Also, Review Questions are given at the end of chapters and they can be used by instructors as test questions.

- **Heavily Illustrated Text**

The text in this book is heavily illustrated with screen capture images.

## **Symbols Used in the Textbook**



### **Note**

The author has provided additional information related to various topics in the form of notes.



### **Tip**

The author has provided a lot of information to the users about the topic being discussed in the form of tips.



### **New**

This symbol indicates that the command or tool being discussed is new in this release.



### **Enhanced**

This symbol indicates that the command or tool being discussed has been enhanced in this release.

## **Unit System Followed in the Textbook**

In this book, the Metric system has been used as the default unit system.

## **Formatting Conventions Used in the Textbook**

Please refer to the following list for the formatting conventions used in this textbook.

- Names of tools, buttons, options, menu, command, pages, and tabs are written in boldface. Example: The **Add Beams** tool, the **OK** button, the **File** menu, the **Modeling** tab, the **General** page, and so on.
- Names of dialog boxes, menus, windows, edit boxes, check boxes, and radio buttons are written in boldface. Example: The **Property** dialog box, the **Density** edit box of the **Property** dialog box, and so on.
- Values entered in edit boxes are written in boldface. Example: Enter **Buildings** in the **Name** edit box.
- Names of the files are italicized. Example: *c03\_staad\_connect\_ex1*

## Naming Conventions Used in the Textbook

### Tool

If you click on an item in a toolbar and a command is invoked to create/edit an object or perform some action, then that item is termed as tool. For example: **Insert Node** tool and **Translational Repeat** tool, refer to Figure 1.

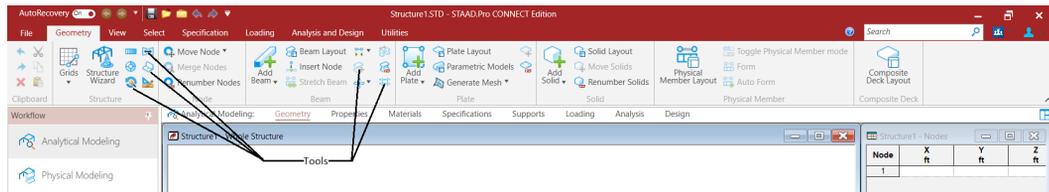


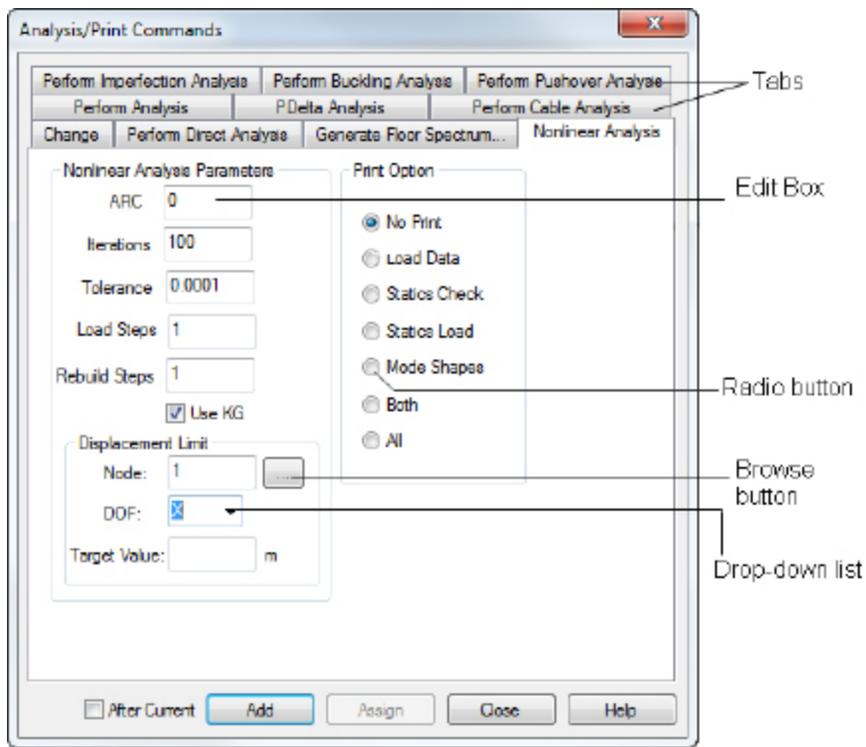
Figure 1 Different tools in the start screen of STAAD.Pro CONNECT Edition

### Button

The item in a dialog box that has a 3d shape is termed as Button. For example, **OK** button, **Cancel** button, **Apply** button, and so on.

### Dialog Box

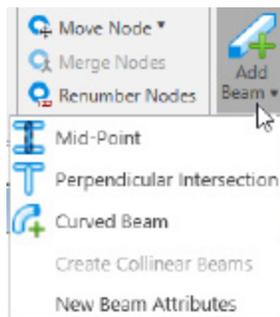
In this textbook, different terms are used to indicate various components of a dialog box, refer to Figure 2.



*Figure 2 Different components of a dialog box*

## Drop-Down

A drop-down is the one in which a set of common tools are grouped together. You can identify a drop-down with a down arrow on it. These drop-downs are given a name based on the tools grouped in them. For example, **Add Beam** drop-down, **Add Plate** drop-down, and so on; refer to Figure 3.



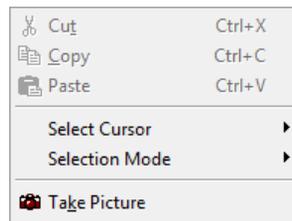
*Figure 3 The Add Beam drop-down*

## Drop-Down List

A drop-down list is the one in which a set of options are grouped together. You can set various parameters using these options. You can identify a drop-down list with a down arrow on it. To know the name of a drop-down list, move the cursor over it; its name will be displayed as a tool tip. For example, Loading type drop-down list, DDF drop-down list, and so on.

## Options

Options are the items that are available in shortcut menus, dialog boxes, drop-down lists, and so on. For example, choose the **Orientation** option from the shortcut menu displayed on right-clicking in the Main Window, refer to Figure 4.



*Figure 4 The shortcut menu displayed in the main window*

## Free Companion Website

It has been our constant endeavor to provide you the best textbooks and services at affordable price. In this endeavor, we have come out with a Free Companion website that will facilitate the process of teaching and learning of STAAD.Pro CONNECT Edition. If you purchase this textbook, you will get access to the files on the Companion website.

The resources available for the faculty and students in this website are as follows:

### Faculty Resources

- **Technical Support**

You can get online technical support by contacting [techsupport@cadcim.com](mailto:techsupport@cadcim.com).

- **Instructor Guide**

Solutions to all review questions and exercises in the textbook are provided in the instructor guide to help the faculty members test the skills of the students.

- **Example Files**

The example files used are available for free download.

**Student Resources****• Technical Support**

You can get online technical support by contacting *techsupport@cadcim.com*.

**• Example Files**

The example files used are available for free download.

If you face any problem in accessing these files, please contact the publisher at *sales@cadcim.com* or the author at *stickoo@pnw.edu* or *tickoo525@gmail.com*.

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