



**GOVERNMENT OF TAMIL NADU**

**HIGHER SECONDARY FIRST YEAR**

**VOCATIONAL EDUCATION**

# **Basic Civil Engineering**

## **THEORY & PRACTICAL**

A publication under Free Textbook Programme of Government of Tamil Nadu

**Department of School Education**

**Untouchability is Inhuman and a Crime**

## **Government of Tamil Nadu**

First Edition - 2018

Revised Edition - 2019, 2021, 2022

(Published under New Syllabus)

**NOT FOR SALE**

## **Content Creation**



State Council of Educational Research  
and Training

© SCERT 2018

## **Printing & Publishing**



Tamil NaduTextbook and Educational  
Services Corporation

[www.textbooksonline.tn.nic.in](http://www.textbooksonline.tn.nic.in)

## Preface

This book on “Basic Civil Engineering” has been written entirely based on new syllabus framed by TNSCERT. The subject matter is explained in a simple and lucid language, lightened by sufficient colourful diagrams, illustrations with learning objectives.

In each chapter, Quotes, Activities, “Do you Know” and web search links were given which enhance the students knowledge. QR Codes for the tough area of the subject were marked. This will help the students to understand the subject further in detail. A set of Model Questions were also included at the end of each unit.

Case studies which were included at the end of this book would be useful to motivate the students and also give an idea about the diversity of their course.

I extend my sincere thanks to the Director, Joint Director and Staff members whose patronage on this book to come out and the committee of learned Teachers who shouldered the responsibility to bring the book in good shape.

Despite all our efforts, some errors and minor mistakes might have crept in. Your positive suggestion, regarding the improvement of this book will be thankfully acknowledged.

## HOW TO USE THE BOOK



### Learning Objectives

Learning objectives are brief statements that describe what students will be expected to learn by the end of school year, course, unit, lesson or class period

### Chapter Outline

Illustrate the complete overview of chapter



Amazing facts, Rhetorical questions to lead students to Engineering inquiry

### Activity

Directions are provided to students to conduct activities in order to explore, enrich the concept

### Infographics

Visual representation of the lesson to enrich learning

### Evaluation

Assess students to pause, think and check their understanding



To motivate the students to further explore the content digitally and take them in to virtual world

### Career corner

List of professions related to the subject

### References

List of related books for further details of the topic

### Web links

List of digital resources

### Glossary

Explanation of Engineering terms

### Competitive Exam questions

Model questions to face various competitive exams

## Career Guidance

### Vertical Mobility - Higher Education

After completion of Basic Civil Engineering Vocational Group students are eligible

- \* To join Bachelor degree in Engineering in any discipline in Engineering Colleges.
- \* To join Bachelor degree in Architecture.
- \* To join directly in second year Diploma Engineering in polytechnic colleges in any discipline.
- \* To join AMIE through Distance education which is equal to Bachelor in Engineering.
- \* To join Diploma in Teacher Education.
- \* To join B.Sc Mathematics.
- \* To join B. Com., B.A., B.B.A., B.C.S., B.C.A., etc.
- \* To join B.L, L.L.B., (Law Courses).
- \* To join Diploma and B.Sc. in Catering Technology.

### Horizontal Mobility (Employment/Self Employment)

#### Employment

Join as Apprentice Trainee/Site Supervisors in reputed companies like

- \* L & T Construction pvt ltd.
- \* Various private construction companies.
- \* As CAD Draughtsman in Architectural offices.
- \* As field surveyor.
- \* As quantity surveyor.

#### Self-Employment

- \* After getting sufficient knowledge in this field, can do Building Construction Works individually.

### Competitive Exam

- \* TNPSC – [www.tnpsc.gov.in](http://www.tnpsc.gov.in)
- \* Railway Recruitment Board (RRB) [www.Indainrailways.gov.in](http://www.Indainrailways.gov.in)
- \* Indian Navy – [www.indiannavy.nic.in](http://www.indiannavy.nic.in)
- \* Indian Army – [www.indiannavy.nic](http://www.indiannavy.nic)
- \* Indian Air Force – [www.indianairforce.nic.in](http://www.indianairforce.nic.in)
- \* Indian Coast Guard – [www.joinindiancoastguard.gov.in](http://www.joinindiancoastguard.gov.in)
- \* Tamilnadu Uniform Service Recruitment Board – [www.tnsrb.gov.in](http://www.tnsrb.gov.in)
- \* Central Reserve Police Force (CRPF) [www. http://crpf.nic.in](http://www.http://crpf.nic.in)
- \* Indian Postal Department – [www.indianpost.gov.in](http://www.indianpost.gov.in)
- \* LIC of India [www.lic.in](http://www.lic.in)

# Contents

## Basic Civil Engineering

Serial No.	Unit No.	Chapter Title	Page No.	Month
1.	1	<b>Basic Engineering Drawing</b>		June
		1.1 Drawing Instruments and their uses	1-14	
		1.2 Lines, Lettering and Dimensioning	15-24	
2.	2	<b>AutoCAD</b>		June-July
		2.1 AutoCAD Software	25-32	
		2.2 AutoCAD Basics	33-54	
3.	3	<b>Building Materials</b>		July
		3.1 Stones	55-62	
		3.2 Bricks	63-73	
		3.3 Sand	74-77	
4.	4	<b>Building Materials</b>		August
		4.1 Cement	78-85	
		4.2 Mortar	86-89	
		4.3 Concrete	90-101	
5.	5	<b>Building Materials</b>		August-September (Quarterly)
		5.1 Timber	102-114	
		5.2 Lime	115-118	
		5.3 Tiles	119-124	
6.	6	<b>Building Construction</b>		October
		6.1 Foundation	125-134	
		6.2 Stone Masonry	135-144	
		6.3 Brick Masonry	145-152	

7.	7	<b>Building Construction</b>		November
		7.1 Lintels and Arches	<b>153-160</b>	
		7.2 Doors and Windows	<b>161-172</b>	
8.	8	<b>Building Construction</b>		November-December (Half yearly)
		8.1 Stairs	<b>173-180</b>	
		8.2 Roofs	<b>181-191</b>	
		8.3 Floors and Flooring	<b>192-198</b>	
		<i>Case Studies</i>	<b>199-202</b>	
		<i>Marks Allocation</i>	<b>203</b>	
		<i>Model Question Paper I</i>	<b>204-206</b>	
		<i>Model Question Paper II</i>	<b>207-208</b>	
		<i>References</i>	<b>209</b>	
		<i>Common Glossary</i>	<b>210-214</b>	
		<i>Basic Civil Engineering Practical</i>	<b>215-254</b>	



**E-book**



**Assessment**