

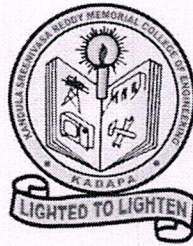
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(Autonomous)

Kadapa-516003. AP

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(An ISO 9001-2008 Certified Institution)

Department of Civil Engineering



Certification Course

on

STAAD Pro.

(Design and Analysis of RCC Structures)

Course Instructor: Sri. KLV Saivardhan Reddy, founder of Vybhavam Engineers.

Course Coordinators: Dr. N. Amaranatha Reddy, Associate Professor, CED, KSRMCE

Dr. I. Srinivasula Reddy, Assistant Professor, CED, KSRMCE

Date Duration of Course offered: 19/09/21 to 24/10/21



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Kadapa, Andhra Pradesh, India- 516 003

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Lr./KSRMCE/CE/2021-22/

Date: 13-09-2021

From

Dr. I. Srinivasula Reddy,
Asst. Professor and Course Coordinator,
Dept. of Civil Engineering,
KSRMCE (A),
Kadapa.

To

The Principal,
KSRMCE (A),
Kadapa.

Sub: Permission to Conduct Certificate Course – Reg.

Respected Sir,

The Department of Civil Engineering is planning to offer a certification course on "STAAD Pro, (Design and Analysis of RCC Structures)" to B. Tech. students of KSRMCE. The course will start on 19th Sep. 2021 to 24th October 2021. In this regard, I am requesting you to accept the proposal to conduct certificate course.

Thanking you

Forwarded to principal sir
YPR

Yours faithfully

(Dr. I. Srinivasula Reddy)

Permitted
V. S. S. Murthy



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Cr./KSRMCE/CE/2021-22/

Date: 14/09/2021

Circular

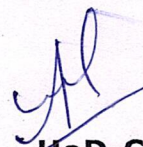
The Department of Civil Engineering is offering a certification course on "STAAD Pro, (Design and Analysis of RCC Structures)". The course will start from 19-09-2021 in CADD Lab., Department of Civil Engineering. In this regard, interested students of KSRMCE are required to register for the Certification Course. Students can contact the course coordinators for the registration process.

For any information regarding the course contact,

The Course Coordinators
Dr. Amaranath Reddy,
Associate Professor,
Dept. of Civil Engg.-KSRMCE.

and

Dr. I. Srinivasula Reddy,
Assistant Professor,
Dept. of Civil Engg.-KSRMCE.


HoD-CE

Cc to:

IQAC-KSRMCE



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Registration form for "Certification course on STAAD Pro. (Design and Analysis of RCC Structures)"

Course Instructor: Sri. KLV
Saivardhan Reddy, founder of Vybhavam Engineers.

Course Coordinators: Dr. N.
Amaranatha Reddy, Associate Professor, CED, KSRMCE and

Dr. I. Srinivasula Reddy, Assistant
Professor, CED, KSRMCE

Date Duration of Course offered:
19/09/21
to 24/10/21

[reddysrinu@ksrmce.ac.in](mailto:red dysrinu@ksrmce.ac.in) Switch account



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* Required

Student Name *

Your answer

Reg. No. *

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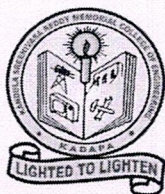
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Department of Civil Engineering

Registration list of Certification course

on

STAAD Pro, (Design and Analysis of RCC Structures)

Sl.No.	Student Name	Reg. No.
1	VENUGOPAL REDDY A.	199Y5A0105
2	CHENNAKESHA D.	199Y1A0109
3	DASTAGIRI D.	199Y5A0117
4	GURU VINOD K.	209Y5A0129
5	HARI KRISHNA M.	209Y5A0148
6	KALINGA J.	209Y5A0128
7	JAYA SIMHA S.	209Y5A0170
8	KASANNA P.	199Y5A0143
9	VENKATESWARLU K.	199Y5A0127
10	MAHESH M.	199Y5A0132
11	MOHAMMAD SALEEM S.	199Y5A0153
12	REDDAIAH N.	199Y5A0138
13	SAI MALLIKARJUNA REDDY K.	189Y1A0145
14	AMMEER BASHA P.	209Y5A0154
15	PREMCHAND P.	199Y5A0145
16	NAGA HEMA PRANITHA SREE Y.	189Y1A01C6
17	RAMAKRISHNA K.	209Y5A0134
18	ROHIT C.	199Y5A0111
19	SRAVANI S.	199Y5A0155
20	GANGA SWETHA V.	189Y1A01C3
21	UPENDRA C.	209Y5A0112
22	VINOD KUMAR U.	209Y5A0180
23	CHANDRASEKHAR V.	199Y1A0167

Coordinators

HoD-Civil Engg.
Head

Department of Civil Engineering
K.S.R.M. College of Engineering
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KADAPA 516 003. (A.P.)

Syllabus of Certification Course

Course Name: STAAD Pro, (Design and Analysis of RCC Structures).

Module I:

Installation of STAAD Pro. in windows computer system, Creating Models, Structures, Graphical Interface, Specify Member Properties, Specify Material Constants, Specify Supports, Specify Loads, Specify Analysis Type, Annotating the Displacements, Creating Models of a Reinforced, Concrete Framed Structure.

Module II:

Creating simple beams with different support conditions, Applying point load, Uniformly Distribute Loads, Uniformly Varying loads on beam member, shear force & bending moment diagrams, Report preparation.

Module III:

Modeling Truss members using GUI of STAAD Pro., applying loads on truss members, finding member forces and joint reactions using STAAD Pro., Report preparation.

Module IV

Interactive Design Information, Creating Multy-Storeyed Models Using Graphical Interface, Performing Analysis and Designing, Viewing Results Using the Output File, Viewing Post Post –Processing, Producing on Onscreen Report

Text Books:

1. T.S. Sarma, Staad Pro V8i for Beginners: With Indian Examples, Notion Press; 1st edition (1 January 2014).
2. Sham Tickoo, Learning Bentley Staad.Pro V8I for Structural Analysis, Dreamtech Press (10 June 2015).

References:

1. Learn Yourself Staad.Pro V8i , LAP Lambert Academic Publishing
2. <https://www.bentley.com/en/products/product-line/structural-analysis-software/staadpro>



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Certification course on "STAAD Pro, (Design and Analysis of RCC Structures)"

Date	Timing	Course Instructor	Topic to be covered
19-09-2021	9AM to 6PM	Sri. KLV Saivardhan Reddy	Module I: STAAD Pro. installation, Basic knowledge on STAAD Pro. GUI, creating models, Specify Supports, Specify Loads, Specify Analysis Type, Annotating the Displacements, Creating Models of a Reinforced, Concrete Framed Structure
26-09-2021	9AM to 6PM	Sri. KLV Saivardhan Reddy	Module II: Analysis of beams using STAAD Pro.
03-10-2021	9AM to 6PM	Sri. KLV Saivardhan Reddy	Module III: Analysis of Trusses using STAAD Pro.
24-10-2021	9AM to 6PM	Sri. KLV Saivardhan Reddy	Module IV: Analysis and Design of Multy-Storeyed Building.

Instructor:

Coordinators:



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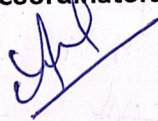
Department of Civil Engineering

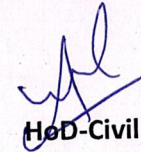
Attendance sheet of Certification course on "STAAD Pro, (Design and Analysis of RCC Structures)"

Sl. No.	Student Roll No.	Student Name	19/09	26/09	03/10	24/10
1	199Y5A0105	VENUGOPAL REDDY A.	<i>ven</i>	<i>ven</i>	<i>ven</i>	<i>ven</i>
2	199Y1A0109	CHENNAKESHA D.	<i>G</i>	<i>G</i>	<i>G</i>	<i>G</i>
3	199Y5A0117	DASTAGIRI D.	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>
4	209Y5A0129	GURU VINOD K.	<i>G</i>	<i>G</i>	<i>G</i>	<i>G</i>
5	209Y5A0148	HARI KRISHNA M.	<i>H</i>	<i>H</i>	<i>H</i>	<i>H</i>
6	209Y5A0128	KALINGA J.	<i>K</i>	<i>K</i>	<i>K</i>	<i>K</i>
7	209Y5A0170	JAYA SIMHA S.	<i>J</i>	<i>J</i>	<i>J</i>	<i>J</i>
8	199Y5A0143	KASANNA P.	<i>K</i>	<i>K</i>	<i>K</i>	<i>K</i>
9	199Y5A0127	VENKATESWARLU K.	<i>V</i>	<i>V</i>	<i>V</i>	<i>V</i>
10	199Y5A0132	MAHESH M.	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>
11	199Y5A0153	MOHAMMAD SALEEM S.	<i>M. Saleem</i>	<i>M. Saleem</i>	<i>M. Saleem</i>	<i>M. Saleem</i>
12	199Y5A0138	REDDAIAH N.	<i>R</i>	<i>R</i>	<i>R</i>	<i>R</i>
13	189Y1A0145	SAI MALLIKARJUNA REDDY K.	<i>S</i>	<i>S</i>	<i>S</i>	<i>S</i>
14	209Y5A0154	AMMEER BASHA P.	<i>A</i>	<i>A</i>	<i>A</i>	<i>A</i>
15	199Y5A0145	PREMCHAND P.	<i>P</i>	<i>P</i>	<i>P</i>	<i>P</i>
16	189Y1A01C6	NAGA HEMA PRANITHA SREE Y.	<i>N</i>	<i>N</i>	<i>N</i>	<i>N</i>

17	209Y5A0134	RAMAKRISHNA K.	Kram	Kram	Kram	Kram
18	199Y5A0111	ROHIT C.	Rohit	Rohit	Rohit	Rohit
19	199Y5A0155	SRAVANI S.	S	S	S	S
20	189Y1A01C3	GANGA SWETHA V.	Swetha	Swetha	Swetha	Swetha
21	209Y5A0112	UPENDRA C.	U	U	U	U
22	209Y5A0180	VINOD KUMAR U.	Vinod Kumar	Vinod Kumar	Vinod Kumar	Vinod Kumar
23	199Y1A0167	CHANDRASEKHAR V.	V.Chandrasekh	V.Chandrasekh	V.Chandrasekh	V.Chandrasekh

Coordinators

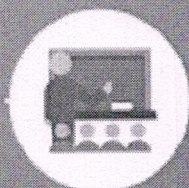




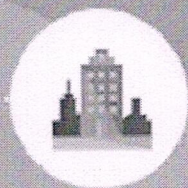
Head-Civil Engg.

Head

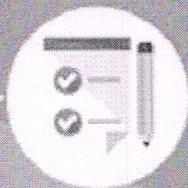
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Theory
Classes



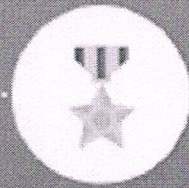
Examples on RCC
Structural Design



Tasks
&
Assignments



Project on RCC
Structural Design &
Analysis



Certification

DURATION

32hrs



04 sessions
of
8 hour Duration

JOIN US FROM 19th SEPTEMBER, 2021

FOR "CERTIFICATION COURSE ON STAAD PRO (Design & Analysis of RCC Structures)"

Resource Person

K L V Saivardhan Reddy (M. Tech)

K.S.R.M Alumni

On behalf of

Vybhavam Student Empowerment Program


Instructors

Dr. N. Amaranatha Reddy

Head of the Department
Civil Engineering Department
K.S.R.M College of Engineering

Dr. I. Srinivasula Reddy

Assistant Professor
Civil Engineering Department
K.S.R.M College of Engineering

 **vybhavam**
Students Empowerment

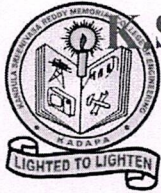
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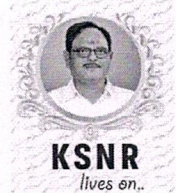
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Report

of

Certificate Course on STAAD Pro. (Design and Analysis of RCC Structures)

From 19-09-2021 to 24-10-2021

Target Group	:	Students
Details of Participants	:	23 Students
Co-coordinator(s)	:	Dr. I. Srinivasula Reddy
Organizing Department	:	Civil Engineering
Venue	:	Computer Lab, Civil Engg.

Description:

The Department of Civil Engineering offered the certification course on "STAAD Pro" from 19-09-2021 to 24-10-2021 and the course was organized for a total number of 32 hours. The main resource person for the course was K L V Saivardhan Reddy, founder of Vybhavam Engineers. The course instructors were Dr. N. Amaranath Reddy (Associate Professor, Dept. Civil Engg.) and Dr. I. Srinivasula Reddy (Assistant Professor, Dept. of Civil Engg.).

STAAD.Pro is one of the most widely used structural analysis and design software products worldwide. It can apply more than 90 international steel, concrete, timber and aluminium design codes. It can make use of various forms of analysis from the traditional static analysis to more recent analysis methods like p-delta analysis, geometric non-linear analysis, Pushover analysis (Static-Non Linear Analysis) or a buckling analysis. It can also make use of various forms of dynamic analysis methods from time history analysis to response spectrum analysis. The response spectrum analysis feature is supported for both user defined spectra as well as a number of international code specified spectra.



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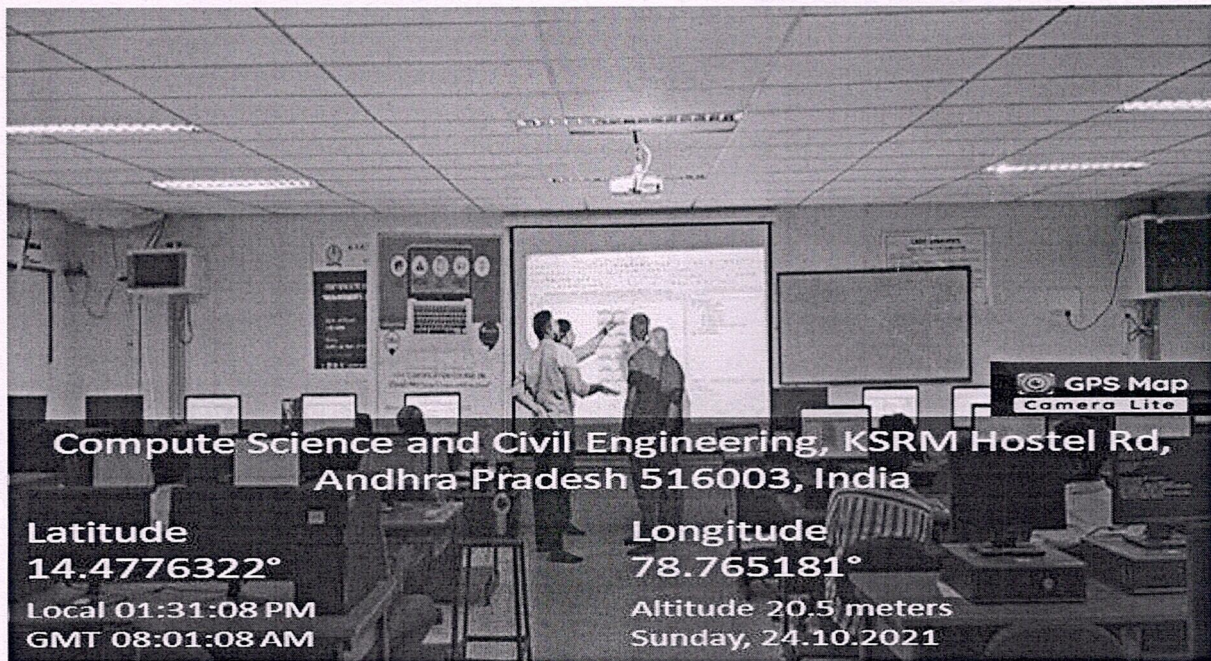


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The course was designed by considering the student are new to the STAAD Pro. software. The course started by giving instruction to process of installing the software and brief on various installation problems. The course ended by designing a multi-story building. The brief contents of the course are given below as follows:

- STAAD Software Installation
- Project task menu
- Detailed explanation on all Menu bars
- Modeling and analysis of a simple supported beam with various loading conditions
- Analysis of truss using STAAD Pro.
- Creating Building Plan using AutoCADD and importing to STAAD Pro.
- Design requirements for a simple home and multi-story building
- Modeling and analysis five story building
- Report generation from the STAAD model
- Reading skills of STAAD Pro. Report of a project.


The picture taken during the course are given below:




Dr. I. Srinivasula Reddy
(Course Coordinator)


Dr. N. Amaranath Reddy
(HoD, Civil Engg.)

Head
Department of Civil Engineering
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* Required

Reg. No. *

Your answer

Name of The Student *

Your answer

Is the course content met your expectations? *

☐ Yes

☐ No

Are the lecture hours sufficient to cover the topics? *

☐ Yes

☐ No



Rate the course instructor *

1-Low, 5-High

1 ☐

2 ☐

3 ☐

4 ☐

5 ☐

Is this course useful for your Carrier? *

☐ Yes

☐ No

Rate the entire course? *

1-Low, 5-High

1 ☐

2 ☐

3 ☐

4 ☐

5 ☐

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Department of Civil Engineering

Feedback of students on Certification Course on "STAAD Pro, (Design and Analysis of RCC Structures)"

Sl. No.	Name of The Student	Reg. No.	Is the course content met your expectations?	Are the lecture hours sufficient to cover the topics?	Rate the course instructor	Is this course useful for your Carrier?	Rate the entire course?
1	VENUGOPAL REDDY A.	199Y5A0105	Yes	Yes	5	Yes	5
2	CHENNAKESHA D.	199Y1A0109	Yes	Yes	5	Yes	5
3	DASTAGIRI D.	199Y5A0117	Yes	Yes	5	Yes	4
4	GURU VINOD K.	209Y5A0129	Yes	Yes	5	Yes	5
5	HARI KRISHNA M.	209Y5A0148	Yes	Yes	4	May be	5
6	KALINGA J.	209Y5A0128	Yes	Yes	5	Yes	5
7	JAYA SIMHA S.	209Y5A0170	Yes	Yes	5	Yes	5
8	KASANNA P.	199Y5A0143	Yes	Yes	4	Yes	5
9	VENKATESWARLU K.	199Y5A0127	Yes	Yes	4	Yes	5
10	MAHESH M.	199Y5A0132	Yes	Yes	5	Yes	5
11	MOHAMMAD SALEEM S.	199Y5A0153	Yes	Yes	5	Yes	5
12	REDDAIAH N.	199Y5A0138	Yes	Yes	5	Yes	5
13	SAI MALLIKARJUNA REDDY K.	189Y1A0145	Yes	Yes	5	Yes	5
14	AMMEER BASHA P.	209Y5A0154	Yes	Yes	5	Yes	5
15	PREMCHAND P.	199Y5A0145	Yes	Yes	5	Yes	5

16	NAGA HEMA PRANITHA SREE Y.	189Y1A01C6	Yes	Yes	5	Yes	5
17	RAMAKRISHNA K.	209Y5A0134	Yes	Yes	5	Yes	5
18	ROHIT C.	199Y5A0111	Yes	Yes	5	Yes	5
19	SRAVANI S.	199Y5A0155	Yes	Yes	5	Yes	5
20	GANGA SWETHA V.	189Y1A01C3	Yes	Yes	5	May be	5
21	UPENDRA C.	209Y5A0112	Yes	Yes	5	Yes	5
22	VINOD KUMAR U.	209Y5A0180	Yes	Yes	5	Yes	5
23	CHANDRASEKHAR V.	199Y1A0167	Yes	Yes	5	Yes	5


Coordinators

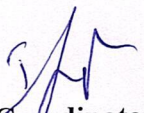


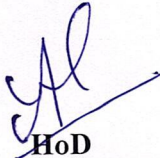

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DEPARTMENT OF CIVIL ENGINEERING
CERTIFICATE COURSE ON
STAAD PRO, (DESIGN AND ANALYSIS OF RCC STRUCTURES)
MARKS AWARD LIST

S.No	Roll Number	Name of the Student	Marks Obtained
1	199Y5A0105	VENUGOPAL REDDY A.	12
2	199Y1A0109	CHENNAKESHA D.	17
3	199Y5A0117	DASTAGIRI D.s	13
4	209Y5A0129	GURU VINOD K.	11
5	209Y5A0148	HARI KRISHNA M.	15
6	209Y5A0128	KALINGA J.	17
7	209Y5A0170	JAYA SIMHA S.	17
8	199Y5A0143	KASANNA P.	19
9	199Y5A0127	VENKATESWARLU K.	16
10	199Y5A0132	MAHESH M.	18
11	199Y5A0153	MOHAMMAD SALEEM S.	19
12	199Y5A0138	REDDAIAH N.	18
13	189Y1A0145	SAI MALLIKARJUNA REDDY K.	7
14	209Y5A0154	AMMEER BASHA P.	10
15	199Y5A0145	PREMCHAND P.	11
16	189Y1A01C6	NAGA HEMA PRANITHA SREE Y.	17
17	209Y5A0134	RAMAKRISHNA K.	19
18	199Y5A0111	ROHIT C.	19
19	199Y5A0155	SRAVANI S.	18
20	189Y1A01C3	GANGA SWETHA V.	15
21	209Y5A0112	UPENDRA C.	13
22	209Y5A0180	VINOD KUMAR U.	15
23	199Y1A0167	CHANDRASEKHAR V.	14


Coordinator


HoD
 Head
 Department of Civil Engineering
 K.S.R.M. College of Engineering
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12/20

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA-516003
DEPARTMENT OF CIVIL ENGINEERING
CERTIFICATE COURSE ON
STAAD PRO, (DESIGN AND ANALYSIS OF RCC STRUCTURES)
ASSESSMENT TEST

Name of the Student: A. Venugopal Gaddy Reg. Number: 19945A0105

Time: 20 Min **(Objective Questions)** **Max. Marks: 20**

Note: Answer the following Questions and each question carries one mark.

1	What is STAAD Pro primarily used for in the context of structural engineering?				[C]
	A) Architectural design	B) Concrete mix design	C) Structural analysis and design	D) Surveying and mapping	
2	In STAAD Pro, what is the purpose of the "STAAD Foundation Advanced" module?				[D]
	A) Steel beam design	B) Reinforced concrete design	C) Foundation design	D) Wind load analysis	
3	Which file extension is commonly used for STAAD Pro input files?				[C]
	A) .RCC	B) .DWG	C) .STD	D) .STA	
4	What is the primary advantage of using STAAD Pro for RCC design?				[B]
	A) It automates the entire design process.	B) It eliminates the need for structural analysis.	C) It provides cost estimates for construction.	D) It generates architectural drawings.	
5	Which analysis method is commonly used in STAAD Pro for RCC structures?				[C]
	A) Finite element analysis	B) Load and resistance factor design	C) Elastic analysis	D) Dynamic analysis	
6	What does "RCC" stand for in the context of structural design?				[C]
	A) Reinforced Concrete Cement	B) Reinforced Composite Construction	C) Reinforced Cement Concrete	D) Reinforced Construction Components	
7	In STAAD Pro, what does the term "Load Case" refer to?				[A]
	A) A specific combination of loads and loadings	B) A type of concrete mix	C) A structural member	D) A building code standard	
8	Which STAAD Pro module is typically used for the design of concrete beams, columns, and slabs?				[C]
	A) STAAD.Pro Advanced Concrete Design	B) STAAD.Pro RAM Connection	C) STAAD Foundation Advanced	D) STAAD.Pro Structural Enterprise	
9	What is the purpose of the "Concrete Designer" module in STAAD Pro?				[A]
	A) To perform structural analysis	B) To create architectural drawings	C) To design concrete members	D) To perform wind load analysis	
10	Which design code is commonly used for RCC design in STAAD Pro for projects in India?				[B]
	A) AISC	B) Eurocode	C) IS 456	D) ACI 318	

11	In STAAD Pro, what does the term "RCDC" stand for?				[B]
	A) Reinforced Concrete Design and Construction	B) Reinforced Concrete Design Center	C) Reinforced Concrete Design Code	D) Reinforced Concrete Development Council	
12	What is the primary purpose of defining materials in STAAD Pro for RCC design?				[C]
	A) To create structural analysis models	B) To estimate construction costs	C) To assign material properties to structural members	D) To generate architectural drawings	
13	Which STAAD Pro feature allows users to visualize the deformed shape of a structure under applied loads?				[C]
	A) Dynamic analysis	B) Load and resistance factor design	C) Deflection analysis	D) Reinforcement detailing	
14	Which STAAD Pro tool is used to generate detailed reinforcement drawings for concrete elements?				[C]
	A) Dynamic analysis	B) Deflection analysis	C) STAAD RCDC	D) Load combination	
15	In STAAD Pro, what is the purpose of defining "Load Combinations"?				[A]
	A) To specify the types of concrete mixes to be used	B) To create structural analysis models	C) To evaluate the effect of multiple loads acting simultaneously	D) To generate construction schedules	
16	Which STAAD Pro module is used for analyzing and designing concrete slabs and foundations?				[A]
	A) STAAD Foundation Advanced	B) STAAD.Pro RAM Connection	C) STAAD.Pro Advanced Concrete Design	D) STAAD.Pro Structural Enterprise	
17	What is the primary function of "STAAD.Pro RAM Connection" in STAAD Pro?				[B]
	A) To analyze reinforced concrete beams	B) To design steel connections	C) To perform dynamic analysis	D) To create architectural drawings	
18	Which analysis type is used to determine the behavior of a structure under seismic loads in STAAD Pro?				[C]
	A) Elastic analysis	B) Static analysis	C) Dynamic analysis	D) Load and resistance factor design	
19	What is the key advantage of using STAAD Pro for RCC design in comparison to manual calculations?				[A]
	A) STAAD Pro provides faster results.	B) STAAD Pro is less accurate.	C) Manual calculations are more cost-effective.	D) Manual calculations are easier to perform.	
20	In STAAD Pro, what is the typical output of the RCC design process?				[C]
	A) Architectural drawings	B) Material cost estimates	C) Detailed reinforcement drawings	D) Soil test reports	

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K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA-516003
DEPARTMENT OF CIVIL ENGINEERING
CERTIFICATE COURSE ON
STAAD PRO, (DESIGN AND ANALYSIS OF RCC STRUCTURES)
ASSESSMENT TEST

Name of the Student: M. Hari Krishna Reg. Number: 20945A0148

Time: 20 Min

(Objective Questions)

Max. Marks: 20

Note: Answer the following Questions and each question carries **one** mark.

1	What is STAAD Pro primarily used for in the context of structural engineering?				[C]
	A) Architectural design	B) Concrete mix design	C) Structural analysis and design	D) Surveying and mapping	
2	In STAAD Pro, what is the purpose of the "STAAD Foundation Advanced" module?				[C]
	A) Steel beam design	B) Reinforced concrete design	C) Foundation design	D) Wind load analysis	
3	Which file extension is commonly used for STAAD Pro input files?				[D]
	A) .RCC	B) .DWG	C) .STD	D) .STA	
4	What is the primary advantage of using STAAD Pro for RCC design?				[A]
	A) It automates the entire design process.	B) It eliminates the need for structural analysis.	C) It provides cost estimates for construction.	D) It generates architectural drawings.	
5	Which analysis method is commonly used in STAAD Pro for RCC structures?				[C]
	A) Finite element analysis	B) Load and resistance factor design	C) Elastic analysis	D) Dynamic analysis	
6	What does "RCC" stand for in the context of structural design?				[B] X
	A) Reinforced Concrete Cement	B) Reinforced Composite Construction	C) Reinforced Cement Concrete	D) Reinforced Construction Components	
7	In STAAD Pro, what does the term "Load Case" refer to?				[A]
	A) A specific combination of loads and loadings	B) A type of concrete mix	C) A structural member	D) A building code standard	
8	Which STAAD Pro module is typically used for the design of concrete beams, columns, and slabs?				[A]
	A) STAAD.Pro Advanced Concrete Design	B) STAAD.Pro RAM Connection	C) STAAD Foundation Advanced	D) STAAD.Pro Structural Enterprise	
9	What is the purpose of the "Concrete Designer" module in STAAD Pro?				[B] X
	A) To perform structural analysis	B) To create architectural drawings	C) To design concrete members	D) To perform wind load analysis	
10	Which design code is commonly used for RCC design in STAAD Pro for projects in India?				[C]
	A) AISC	B) Eurocode	C) IS 456	D) ACI 318	

11	In STAAD Pro, what does the term "RCDC" stand for?				[B] ✓
	A) Reinforced Concrete Design and Construction	B) Reinforced Concrete Design Center	C) Reinforced Concrete Design Code	D) Reinforced Concrete Development Council	
12	What is the primary purpose of defining materials in STAAD Pro for RCC design?				[C] ✓
	A) To create structural analysis models	B) To estimate construction costs	C) To assign material properties to structural members	D) To generate architectural drawings	
13	Which STAAD Pro feature allows users to visualize the deformed shape of a structure under applied loads?				[B] ✗
	A) Dynamic analysis	B) Load and resistance factor design	C) Deflection analysis	D) Reinforcement detailing	
14	Which STAAD Pro tool is used to generate detailed reinforcement drawings for concrete elements?				[C] ✓
	A) Dynamic analysis	B) Deflection analysis	C) STAAD RCDC	D) Load combination	
15	In STAAD Pro, what is the purpose of defining "Load Combinations"?				[C] ✓
	A) To specify the types of concrete mixes to be used	B) To create structural analysis models	C) To evaluate the effect of multiple loads acting simultaneously	D) To generate construction schedules	
16	Which STAAD Pro module is used for analyzing and designing concrete slabs and foundations?				[B] ✗
	A) STAAD Foundation Advanced	B) STAAD.Pro RAM Connection	C) STAAD.Pro Advanced Concrete Design	D) STAAD.Pro Structural Enterprise	
17	What is the primary function of "STAAD.Pro RAM Connection" in STAAD Pro?				[B] ✓
	A) To analyze reinforced concrete beams	B) To design steel connections	C) To perform dynamic analysis	D) To create architectural drawings	
18	Which analysis type is used to determine the behavior of a structure under seismic loads in STAAD Pro?				[C] ✓
	A) Elastic analysis	B) Static analysis	C) Dynamic analysis	D) Load and resistance factor design	
19	What is the key advantage of using STAAD Pro for RCC design in comparison to manual calculations?				[A] ✓
	A) STAAD Pro provides faster results.	B) STAAD Pro is less accurate.	C) Manual calculations are more cost-effective.	D) Manual calculations are easier to perform.	
20	In STAAD Pro, what is the typical output of the RCC design process?				[B] ✗
	A) Architectural drawings	B) Material cost estimates	C) Detailed reinforcement drawings	D) Soil test reports	

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K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA-516003
DEPARTMENT OF CIVIL ENGINEERING
CERTIFICATE COURSE ON
STAAD PRO, (DESIGN AND ANALYSIS OF RCC STRUCTURES)
ASSESSMENT TEST

Name of the Student: M. Hanu Krishna Reg. Number: 20945A0129

Time: 20 Min (Objective Questions) **Max. Marks: 20**

Note: Answer the following Questions and each question carries **one** mark.

1	What is STAAD Pro primarily used for in the context of structural engineering?				[C]
	A) Architectural design	B) Concrete mix design	C) Structural analysis and design	D) Surveying and mapping	
2	In STAAD Pro, what is the purpose of the "STAAD Foundation Advanced" module?				[C]
	A) Steel beam design	B) Reinforced concrete design	C) Foundation design	D) Wind load analysis	
3	Which file extension is commonly used for STAAD Pro input files?				[B]
	A) .RCC	B) .DWG	C) .STD	D) .STA	
4	What is the primary advantage of using STAAD Pro for RCC design?				[A]
	A) It automates the entire design process.	B) It eliminates the need for structural analysis.	C) It provides cost estimates for construction.	D) It generates architectural drawings.	
5	Which analysis method is commonly used in STAAD Pro for RCC structures?				[C]
	A) Finite element analysis	B) Load and resistance factor design	C) Elastic analysis	D) Dynamic analysis	
6	What does "RCC" stand for in the context of structural design?				[C]
	A) Reinforced Concrete Cement	B) Reinforced Composite Construction	C) Reinforced Cement Concrete	D) Reinforced Construction Components	
7	In STAAD Pro, what does the term "Load Case" refer to?				[A]
	A) A specific combination of loads and loadings	B) A type of concrete mix	C) A structural member	D) A building code standard	
8	Which STAAD Pro module is typically used for the design of concrete beams, columns, and slabs?				[A]
	A) STAAD.Pro Advanced Concrete Design	B) STAAD.Pro RAM Connection	C) STAAD Foundation Advanced	D) STAAD.Pro Structural Enterprise	
9	What is the purpose of the "Concrete Designer" module in STAAD Pro?				[B]
	A) To perform structural analysis	B) To create architectural drawings	C) To design concrete members	D) To perform wind load analysis	
10	Which design code is commonly used for RCC design in STAAD Pro for projects in India?				[B]
	A) AISC	B) Eurocode	C) IS 456	D) ACI 318	

11	In STAAD Pro, what does the term "RCDC" stand for?				B
	A) Reinforced Concrete Design and Construction	B) Reinforced Concrete Design Center	C) Reinforced Concrete Design Code	D) Reinforced Concrete Development Council	
12	What is the primary purpose of defining materials in STAAD Pro for RCC design?				D
	A) To create structural analysis models	B) To estimate construction costs	C) To assign material properties to structural members	D) To generate architectural drawings	
13	Which STAAD Pro feature allows users to visualize the deformed shape of a structure under applied loads?				D
	A) Dynamic analysis	B) Load and resistance factor design	C) Deflection analysis	D) Reinforcement detailing	
14	Which STAAD Pro tool is used to generate detailed reinforcement drawings for concrete elements?				D
	A) Dynamic analysis	B) Deflection analysis	C) STAAD RCDC	D) Load combination	
15	In STAAD Pro, what is the purpose of defining "Load Combinations"?				D
	A) To specify the types of concrete mixes to be used	B) To create structural analysis models	C) To evaluate the effect of multiple loads acting simultaneously	D) To generate construction schedules	
16	Which STAAD Pro module is used for analyzing and designing concrete slabs and foundations?				A
	A) STAAD Foundation Advanced	B) STAAD.Pro RAM Connection	C) STAAD.Pro Advanced Concrete Design	D) STAAD.Pro Structural Enterprise	
17	What is the primary function of "STAAD.Pro RAM Connection" in STAAD Pro?				B
	A) To analyze reinforced concrete beams	B) To design steel connections	C) To perform dynamic analysis	D) To create architectural drawings	
18	Which analysis type is used to determine the behavior of a structure under seismic loads in STAAD Pro?				C
	A) Elastic analysis	B) Static analysis	C) Dynamic analysis	D) Load and resistance factor design	
19	What is the key advantage of using STAAD Pro for RCC design in comparison to manual calculations?				B
	A) STAAD Pro provides faster results.	B) STAAD Pro is less accurate.	C) Manual calculations are more cost-effective.	D) Manual calculations are easier to perform.	
20	In STAAD Pro, what is the typical output of the RCC design process?				D
	A) Architectural drawings	B) Material cost estimates	C) Detailed reinforcement drawings	D) Soil test reports	

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K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA-516003
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CERTIFICATE COURSE ON
STAAD PRO, (DESIGN AND ANALYSIS OF RCC STRUCTURES)
ASSESSMENT TEST

Name of the Student: Chenna Keshava Reg. Number: 199Y1A0109

Time: 20 Min

(Objective Questions)

Max. Marks: 20

Note: Answer the following Questions and each question carries **one** mark.

1	What is STAAD Pro primarily used for in the context of structural engineering?				[C]
	A) Architectural design	B) Concrete mix design	C) Structural analysis and design	D) Surveying and mapping	
2	In STAAD Pro, what is the purpose of the "STAAD Foundation Advanced" module?				[C]
	A) Steel beam design	B) Reinforced concrete design	C) Foundation design	D) Wind load analysis	
3	Which file extension is commonly used for STAAD Pro input files?				[D]
	A) .RCC	B) .DWG	C) .STD	D) .STA	
4	What is the primary advantage of using STAAD Pro for RCC design?				[A]
	A) It automates the entire design process.	B) It eliminates the need for structural analysis.	C) It provides cost estimates for construction.	D) It generates architectural drawings.	
5	Which analysis method is commonly used in STAAD Pro for RCC structures?				[C]
	A) Finite element analysis	B) Load and resistance factor design	C) Elastic analysis	D) Dynamic analysis	
6	What does "RCC" stand for in the context of structural design?				[C]
	A) Reinforced Concrete Cement	B) Reinforced Composite Construction	C) Reinforced Cement Concrete	D) Reinforced Construction Components	
7	In STAAD Pro, what does the term "Load Case" refer to?				[A]
	A) A specific combination of loads and loadings	B) A type of concrete mix	C) A structural member	D) A building code standard	
8	Which STAAD Pro module is typically used for the design of concrete beams, columns, and slabs?				[B]
	A) STAAD.Pro Advanced Concrete Design	B) STAAD.Pro RAM Connection	C) STAAD Foundation Advanced	D) STAAD.Pro Structural Enterprise	
9	What is the purpose of the "Concrete Designer" module in STAAD Pro?				[A]
	A) To perform structural analysis	B) To create architectural drawings	C) To design concrete members	D) To perform wind load analysis	
10	Which design code is commonly used for RCC design in STAAD Pro for projects in India?				[A]
	A) AISC	B) Eurocode	C) IS 456	D) ACI 318	

11	In STAAD Pro, what does the term "RCDC" stand for?				[B]
	A) Reinforced Concrete Design and Construction	B) Reinforced Concrete Design Center	C) Reinforced Concrete Design Code	D) Reinforced Concrete Development Council	
12	What is the primary purpose of defining materials in STAAD Pro for RCC design?				[C]
	A) To create structural analysis models	B) To estimate construction costs	C) To assign material properties to structural members	D) To generate architectural drawings	
13	Which STAAD Pro feature allows users to visualize the deformed shape of a structure under applied loads?				[C]
	A) Dynamic analysis	B) Load and resistance factor design	C) Deflection analysis	D) Reinforcement detailing	
14	Which STAAD Pro tool is used to generate detailed reinforcement drawings for concrete elements?				[C]
	A) Dynamic analysis	B) Deflection analysis	C) STAAD RCDC	D) Load combination	
15	In STAAD Pro, what is the purpose of defining "Load Combinations"?				[C]
	A) To specify the types of concrete mixes to be used	B) To create structural analysis models	C) To evaluate the effect of multiple loads acting simultaneously	D) To generate construction schedules	
16	Which STAAD Pro module is used for analyzing and designing concrete slabs and foundations?				[A]
	A) STAAD Foundation Advanced	B) STAAD.Pro RAM Connection	C) STAAD.Pro Advanced Concrete Design	D) STAAD.Pro Structural Enterprise	
17	What is the primary function of "STAAD.Pro RAM Connection" in STAAD Pro?				[B]
	A) To analyze reinforced concrete beams	B) To design steel connections	C) To perform dynamic analysis	D) To create architectural drawings	
18	Which analysis type is used to determine the behavior of a structure under seismic loads in STAAD Pro?				[C]
	A) Elastic analysis	B) Static analysis	C) Dynamic analysis	D) Load and resistance factor design	
19	What is the key advantage of using STAAD Pro for RCC design in comparison to manual calculations?				[A]
	A) STAAD Pro provides faster results.	B) STAAD Pro is less accurate.	C) Manual calculations are more cost-effective.	D) Manual calculations are easier to perform.	
20	In STAAD Pro, what is the typical output of the RCC design process?				[C]
	A) Architectural drawings	B) Material cost estimates	C) Detailed reinforcement drawings	D) Soil test reports	

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K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA-516003
DEPARTMENT OF CIVIL ENGINEERING
CERTIFICATE COURSE ON
STAAD PRO, (DESIGN AND ANALYSIS OF RCC STRUCTURES)
ASSESSMENT TEST

Name of the Student: Dastagiri D.S Reg. Number: 19945A0117

Time: 20 Min **(Objective Questions)** **Max. Marks: 20**

Note: Answer the following Questions and each question carries **one** mark.

1	What is STAAD Pro primarily used for in the context of structural engineering?				[a]	
	A) Architectural design	B) Concrete mix design	C) Structural analysis and design	D) Surveying and mapping		
2	In STAAD Pro, what is the purpose of the "STAAD Foundation Advanced" module?				[c]	
	A) Steel beam design	B) Reinforced concrete design	C) Foundation design	D) Wind load analysis		
3	Which file extension is commonly used for STAAD Pro input files?				[B]	X
	A) .RCC	B) .DWG	C) .STD	D) .STA		
4	What is the primary advantage of using STAAD Pro for RCC design?				[D]	X
	A) It automates the entire design process.	B) It eliminates the need for structural analysis.	C) It provides cost estimates for construction.	D) It generates architectural drawings.		
5	Which analysis method is commonly used in STAAD Pro for RCC structures?				[a]	
	A) Finite element analysis	B) Load and resistance factor design	C) Elastic analysis	D) Dynamic analysis		
6	What does "RCC" stand for in the context of structural design?				[B]	X
	A) Reinforced Concrete Cement	B) Reinforced Composite Construction	C) Reinforced Cement Concrete	D) Reinforced Construction Components		
7	In STAAD Pro, what does the term "Load Case" refer to?				[D]	X
	A) A specific combination of loads and loadings	B) A type of concrete mix	C) A structural member	D) A building code standard		
8	Which STAAD Pro module is typically used for the design of concrete beams, columns, and slabs?				[A]	
	A) STAAD.Pro Advanced Concrete Design	B) STAAD.Pro RAM Connection	C) STAAD Foundation Advanced	D) STAAD.Pro Structural Enterprise		
9	What is the purpose of the "Concrete Designer" module in STAAD Pro?				[c]	
	A) To perform structural analysis	B) To create architectural drawings	C) To design concrete members	D) To perform wind load analysis		
10	Which design code is commonly used for RCC design in STAAD Pro for projects in India?				[C]	
	A) AISC	B) Eurocode	C) IS 456	D) ACI 318		

11	In STAAD Pro, what does the term "RCDC" stand for?				[B]
	A) Reinforced Concrete Design and Construction	B) Reinforced Concrete Design Center	C) Reinforced Concrete Design Code	D) Reinforced Concrete Development Council	
12	What is the primary purpose of defining materials in STAAD Pro for RCC design?				[C]
	A) To create structural analysis models	B) To estimate construction costs	C) To assign material properties to structural members	D) To generate architectural drawings	
13	Which STAAD Pro feature allows users to visualize the deformed shape of a structure under applied loads?				[C]
	A) Dynamic analysis	B) Load and resistance factor design	C) Deflection analysis	D) Reinforcement detailing	
14	Which STAAD Pro tool is used to generate detailed reinforcement drawings for concrete elements?				[C]
	A) Dynamic analysis	B) Deflection analysis	C) STAAD RCDC	D) Load combination	
15	In STAAD Pro, what is the purpose of defining "Load Combinations"?				[B] X
	A) To specify the types of concrete mixes to be used	B) To create structural analysis models	C) To evaluate the effect of multiple loads acting simultaneously	D) To generate construction schedules	
16	Which STAAD Pro module is used for analyzing and designing concrete slabs and foundations?				[A] X
	A) STAAD Foundation Advanced	B) STAAD.Pro RAM Connection	C) STAAD.Pro Advanced Concrete Design	D) STAAD.Pro Structural Enterprise	
17	What is the primary function of "STAAD.Pro RAM Connection" in STAAD Pro?				[B] X
	A) To analyze reinforced concrete beams	B) To design steel connections	C) To perform dynamic analysis	D) To create architectural drawings	
18	Which analysis type is used to determine the behavior of a structure under seismic loads in STAAD Pro?				[B] X
	A) Elastic analysis	B) Static analysis	C) Dynamic analysis	D) Load and resistance factor design	
19	What is the key advantage of using STAAD Pro for RCC design in comparison to manual calculations?				[C] X
	A) STAAD Pro provides faster results.	B) STAAD Pro is less accurate.	C) Manual calculations are more cost-effective.	D) Manual calculations are easier to perform.	
20	In STAAD Pro, what is the typical output of the RCC design process?				[C] X
	A) Architectural drawings	B) Material cost estimates	C) Detailed reinforcement drawings	D) Soil test reports	



K.S.R.M. COLLEGE OF ENGINEERING
(UGC-AUTONOMOUS)

Kadapa, Andhra Pradesh, India- 516 003

Approved by AICTE, New Delhi & Affiliated to JNTUA, Ananthapuramu.

▲ An ISO 14001:2004 & 9001: 2015 Certified Institution



Certification Course on STAAD Pro.
(Design and Analysis of RCC Structures)

Introduction of STAAD.Pro

- STAAD.Pro® is one of the most widely-used software for developing and examining the designs of various structures, such as petrochemical plants, tunnels, bridges etc.
- STAAD.Pro® v8i, the latest version, permits civil engineering individuals to analyze structural designs in terms of features like force, load, displacements etc.
- Multisoft Virtual Academy STAAD.Pro® v8i online training builds expertise in using the software at a professional level in domains, including construction companies, government agencies, architecture firms etc.

History of Staad Pro Software

- STAAD stands for **ST**ructural **A**nalysis **A**nd **D**esign – One of first commercial software in world
- STAAD-III for DOS – non-graphical software
- REI & QSE merged –Analysis engine + Interface = STAAD PRO for windows.
- Sharing capabilities with other major software like AutoCAD, and MS Excel
- Reports of the inputs and the outputs
- Concrete and steel design

Understand STAAD Pro way of doing the job

- One of the most famous analysis methods to analyze continuous beams is, "Moment Distribution Method", which is based on the concept of transferring the loads on the beams to the supports at their ends.
- Each support will take portion of the load according to its K ; K is the stiffness factor, which equals EI/L . As you can see E , and L is constant per span, the only variable here is I ; moment of inertia. I depends on the cross section of the member. So, if you want to use this analysis method, you have to assume a cross section for the spans of the continuous beam.
- If you want to use this method to analyze a simple frame, it will work, but it will not be simple, and if you want to make the frame a little bit more complicated (simple 3D frame) this method all short to accomplish the same mission.
- Hence, a new more sophisticated method emerged, which depends fully on matrices, this method called "Stiffness Matrix Method", the main formula of this method is:
- $[P] = [K] \times [\Delta]$
 $[P]$ is the force matrix = Dead Load, Live Load, Wind Load, etc
 $[K]$ is the stiffness factor matrix. = $K=EI/L$
 $[\Delta]$ is the displacement matrix

Stiffness Method

- The stiffness analysis implemented in STAAD is based on the matrix displacement method.
- In the matrix analysis of structures by the displacement method, the structure is first idealized into an assembly of discrete structural components (frame members or finite elements). Each component has an assumed form of displacement in a manner which satisfies the force equilibrium and displacement compatibility at the joints
- First structural software which adopted Matrix Methods for the method of analysis was STAAD
- Methods used :- Modified Cholesky's method (Decomposition)
Most efficient accurate and time saving method also well suited for Gaussian Elimination Process

Types of Structures

- A STRUCTURE can be defined as an assemblage of elements. STAAD is capable of analyzing and designing structures consisting of both frame, and Finite elements. Almost any type of structure can be analyzed by STAAD.
- Frame elements – Beam elements – 2 nodes
- Finite elements – 1.) Plate – 3 or 4 nodes
2.) Solid – 4 to 8 nodes

Remember for staad -

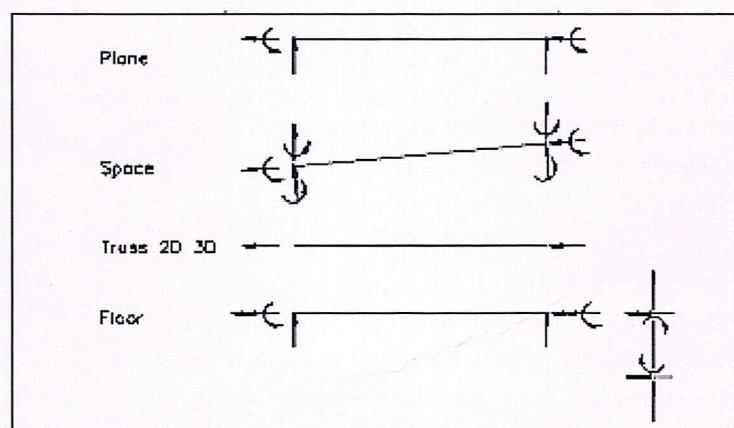
Node becomes Joint *it has a number and xyz coordinates*

Beam becomes Member *it has a number and nodes at its ends*

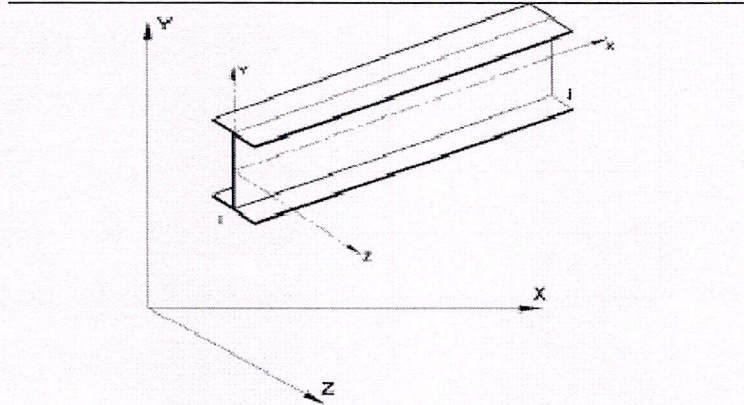
Plate becomes Element *it has a number and node at its corners*

Continue...

- A **TRUSS** structure consists of truss members which can have only axial member forces and no bending in the members
- A **PLANE** structure is bound by a global X-Y coordinate system with loads in the same plane
- A **SPACE** structure, which is a three dimensional framed structure with loads applied in any plane, is the most general.
- A **FLOOR** structure is a two or three dimensional structure having no horizontal (global X or Z) movement of the structure [FX, FZ & MY are restrained at every joint]. The floor framing (in global X-Z plane) of a building is an ideal example of a FLOOR structure. Columns can also be modeled with the floor in a FLOOR structure as long as the structure has no horizontal loading. If there is any horizontal load, it must be analyzed as a SPACE structure.



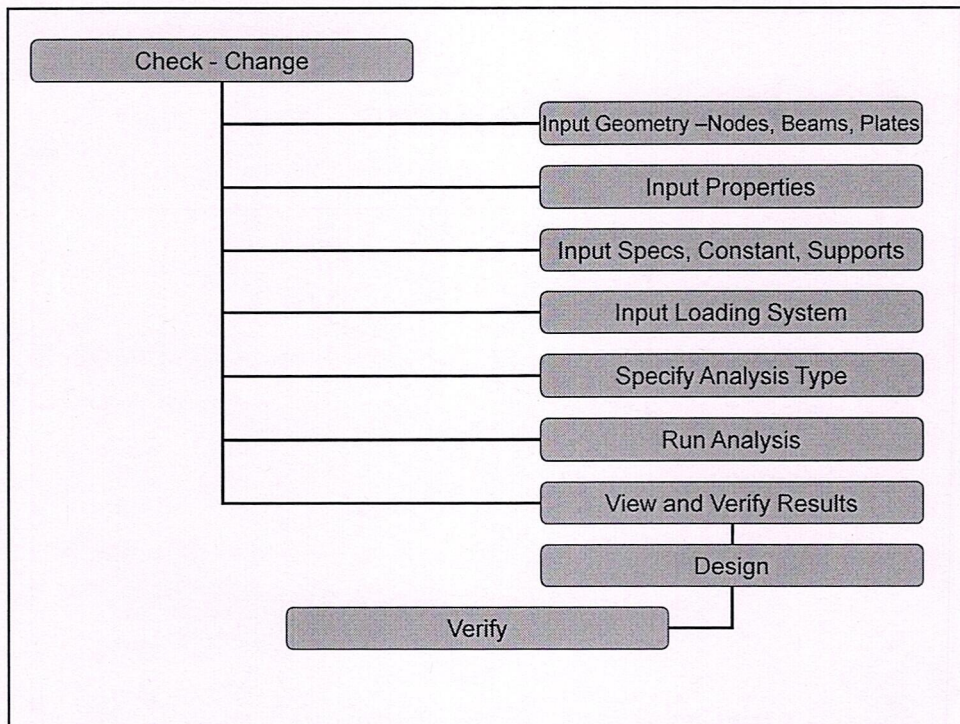
Coordinate Systems



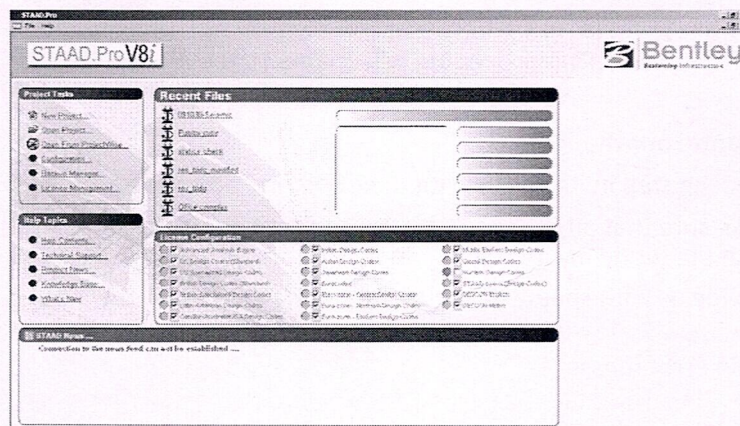
Working Method

In order to build up a good input file we have to understand STAAD Pro way. This procedure will enable us to:

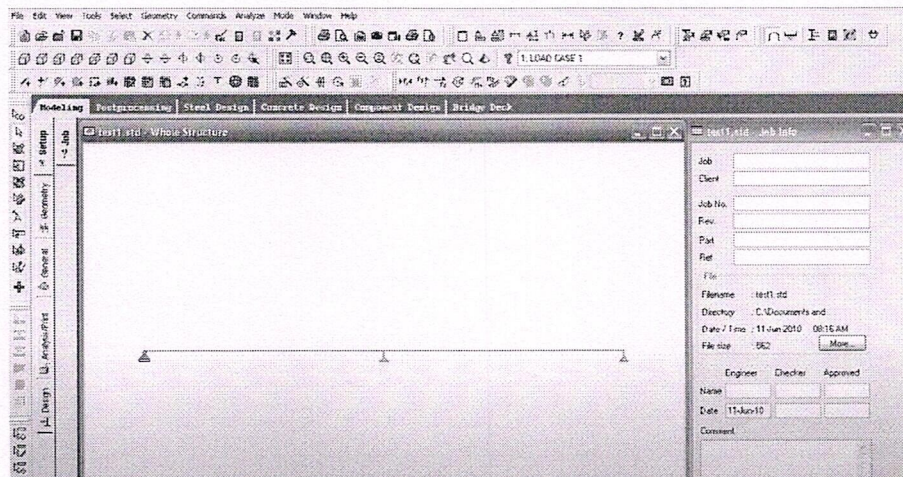
- Organize our thoughts.
- Put each step in its right position, not before, and not after.
- Make sure that all of the STAAD Pro commands are present in the input file (none of them is overlooked).
- Provide us with speedy and guaranteed way to create the input file.
- Avoid error messages.



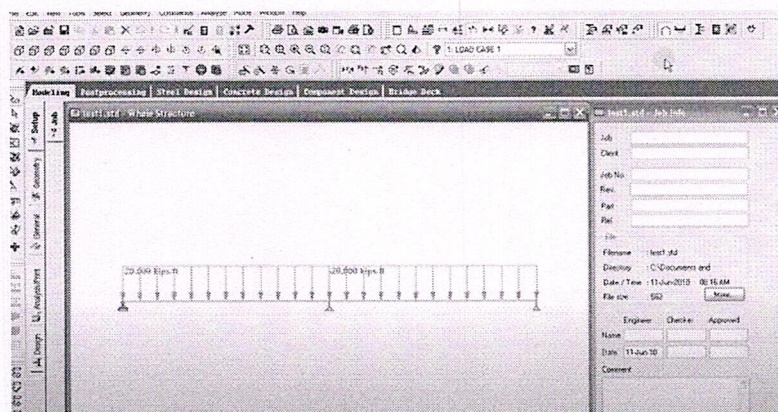
Shall we proceed to Practical Part?



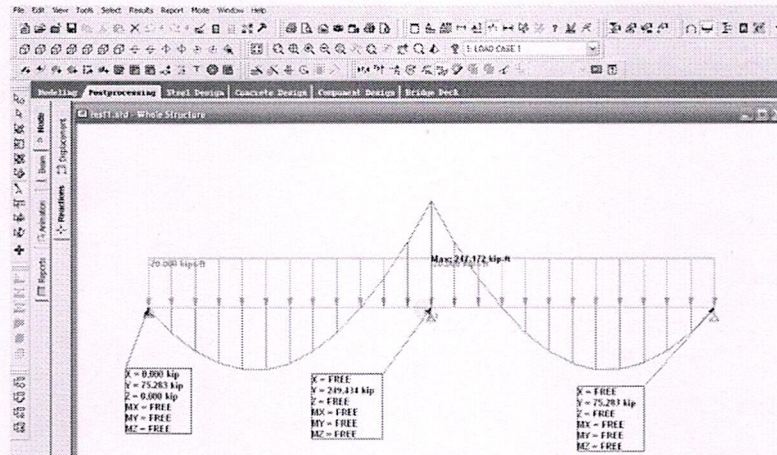
SFD and BMD using STAAD Pro.



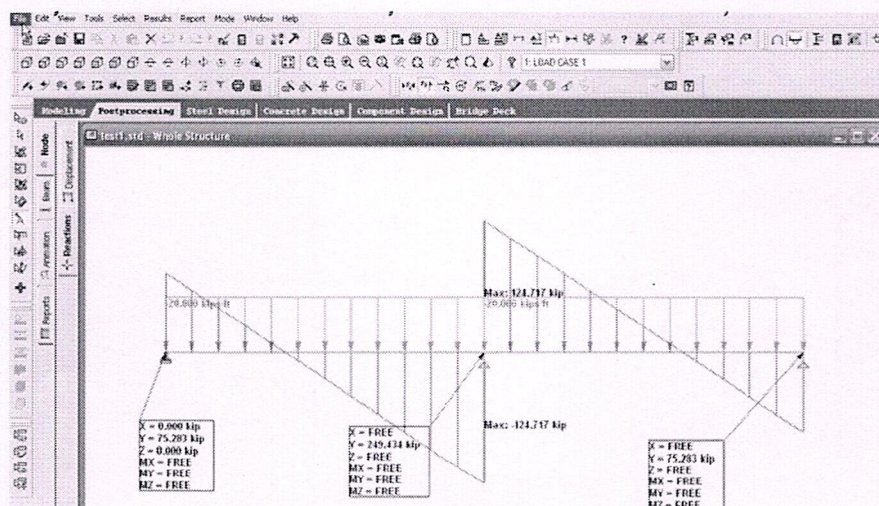
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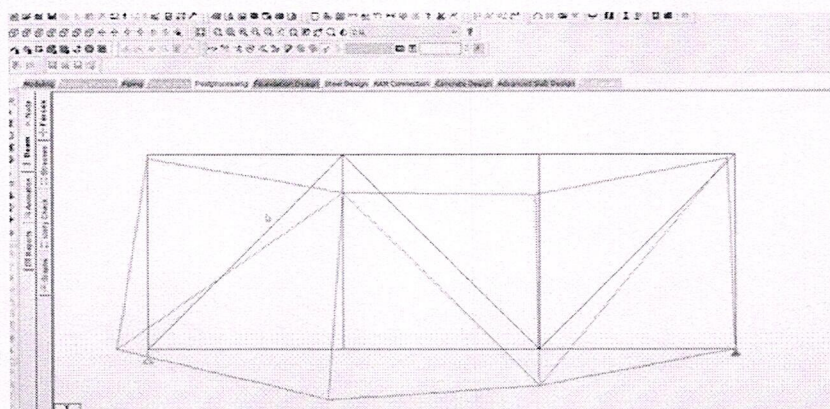
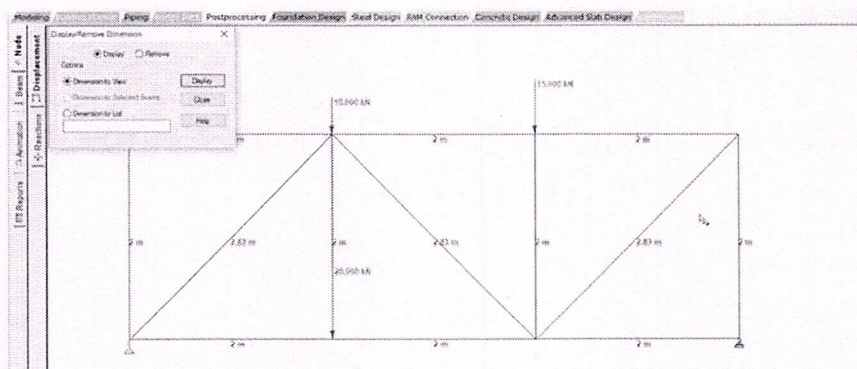
Cond.



Cond.

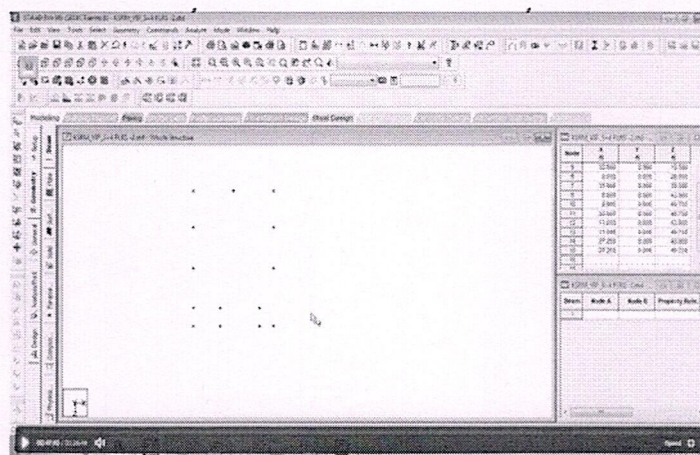


Analysis of trusses using STAAD Pro.

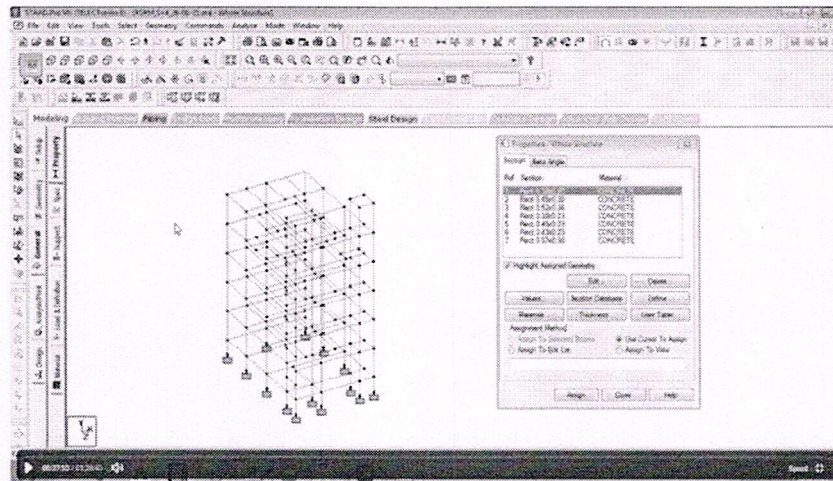


Analysis of Multy-Storyed building using STAAD Pro.

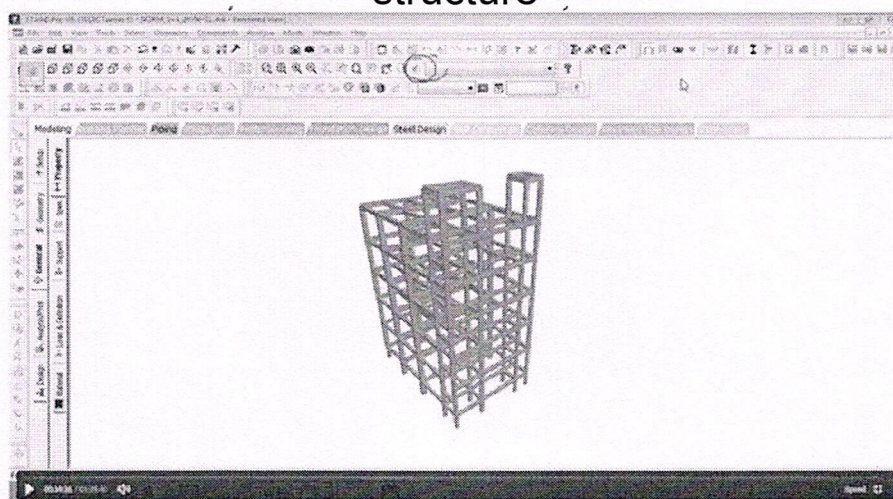
Coordinates of framed structure



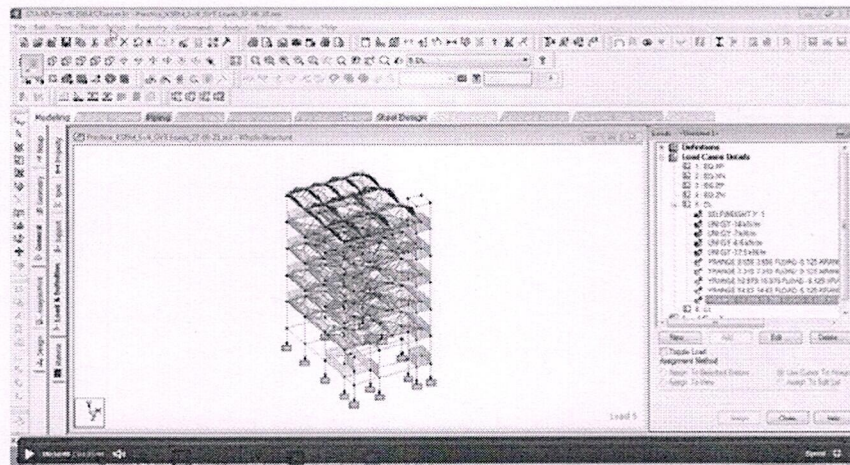
Beam and column elements of framed structure



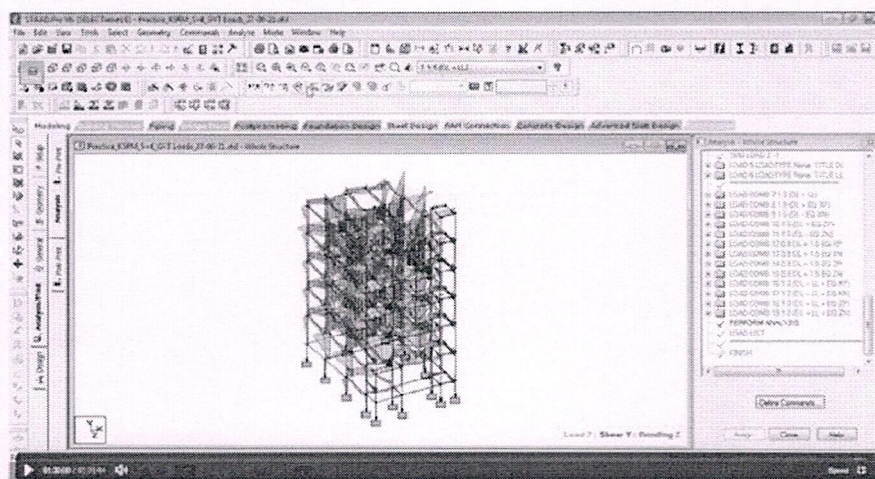
Member with orientation and size of framed structure



Forces on members



Internal reactions in members of framed structures



Chapter 1 | Introduction

Staad is similar to your Engineering Calculator, whatever operation you assign to it, it performs and gives you the result you need. We can do all the operations of the calculator manually as we know concepts of mathematics. In the same way STAAD can be considered as a Structural Engineering Calculator you can assign multiple operations and designs to a structure then staad will perform the analysis of all the operations you provided and present you the result. The result may be just reactions or a complete design.

We can do all the work which Staad will perform and make our manual design. If you do know the design concepts prior to using the staad then you will know how to use staad to its maximum. If you directly do designs with staad without knowing design concepts then it will be like a two year baby playing with abacus. So our kind request is to know the design concepts and perform your design on paper before taking staad output results.

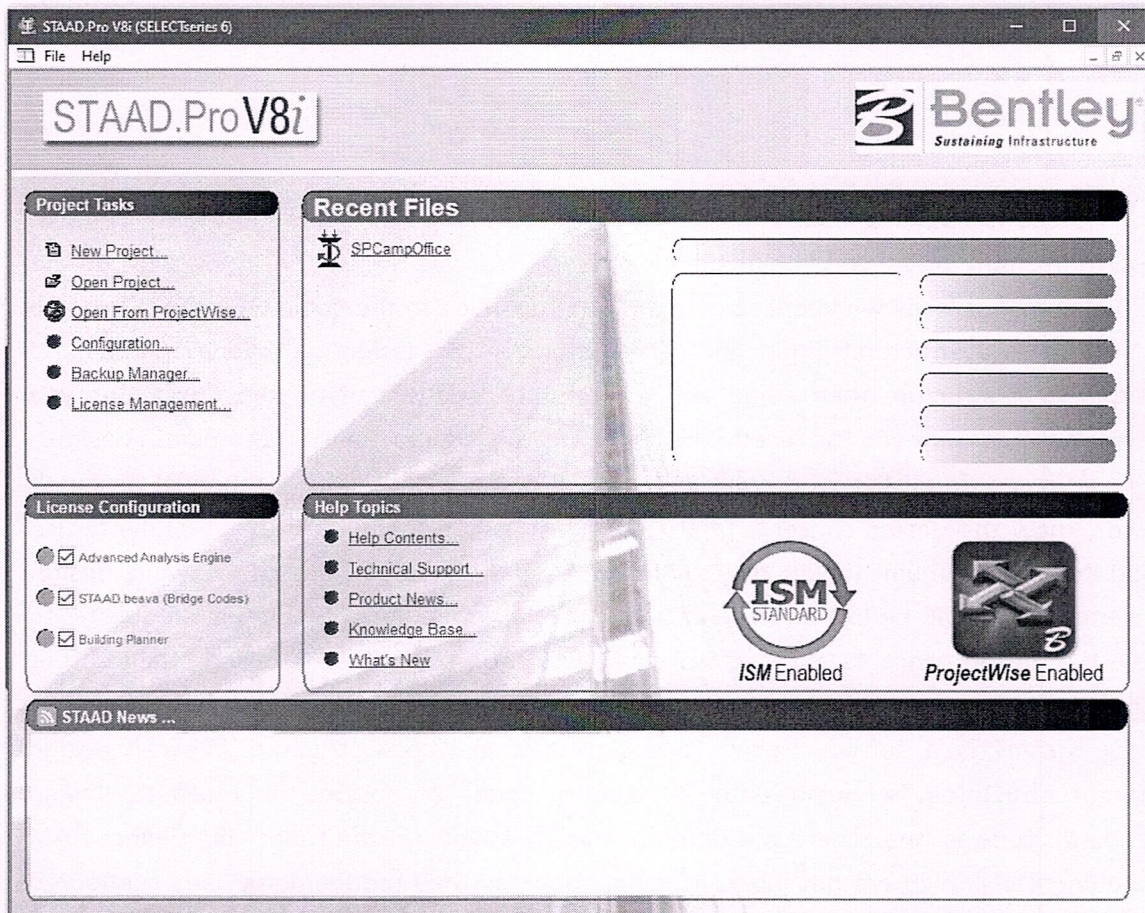
STAAD is a software used to design and analyse a structure. We can design different structures following upto 90 country codes of designs of which IS (Indian Standard) Code is one. There are different design options in the Staad like Piping, RAM modelling etc., which are not included in this book as they require a specially configured license.

As mentioned earlier this book deals with step by step procedure to be followed in modelling the structure and making operations required to complete the analysis of a structure and acquire the design of the structure. The detailed explanation with the examples start from the next chapter i.e, Chapter 2.

In this chapter we will take a brief on the 'working environment tools of staad. Before we play with staad we need to understand where we can find certain operations from the menu. First let us know how the welcome window or landing window of the staad appears as soon as we run it and what are the sub windows available and where do they take us.

1. Where do we start with STAAD

As soon as we run the staad program on windows the landing window shows us different sub windows as shown in the image below.



You can see five tabs/sub-windows in the welcome window i.e, Project Tasks, Recent Files, License Configuration, Help Topics and STAAD News. In the **Recent Files** Tab you can access your recent projects which you last completed or which you left without completing. **License Configuration** Tab shows the configuration of your license type that you are working on.

Help Topics is the tab where you can get help or technical support from STAAD official helplines or it is the place where you can access the base knowledge of STAAD from STAAD.Pro official Blog. **STAAD News** is the tab where you can get latest updates from STAAD, about the bugs clearance or software updates or knowledge sharing of new options that are included in newer versions of STAAD.

In Project Tasks one can create new projects or open existing projects or even configure projects.

1.1. Creating or Opening a Project

Project Tasks → New Project : This is used to create a new project that you would like to work on. For instance, if you are joining to design a G+3 Building then that is your project you have to create. You need to start with creating a new project if you are working on some project for the first time.

Project Tasks → Open Project : If you have to access a project which is already created and partially completed/ to watch the project as a reference then you can open the pre existing project with the **Open Project** option. This option is most useful when you are accessing a file which is not created on your computer or when you have to access an old project for reference purposes. As we already mentioned, we can access our recent files from the **Recent Files** window on the Welcome screen.

1.2. Configuration

From the name itself it is clear that on clicking this we get the configuration settings of the STAAD. On clicking the Configuration link we get the different tabs for setting various configurations,

as shown in the snapshot, that are essential to complete our project.

The Tabs are :

Working Directory → where we can browse a location to process for our working project.

News Channel → here we can set the permissions of what related news you would like to hear from the STAAD News tab.

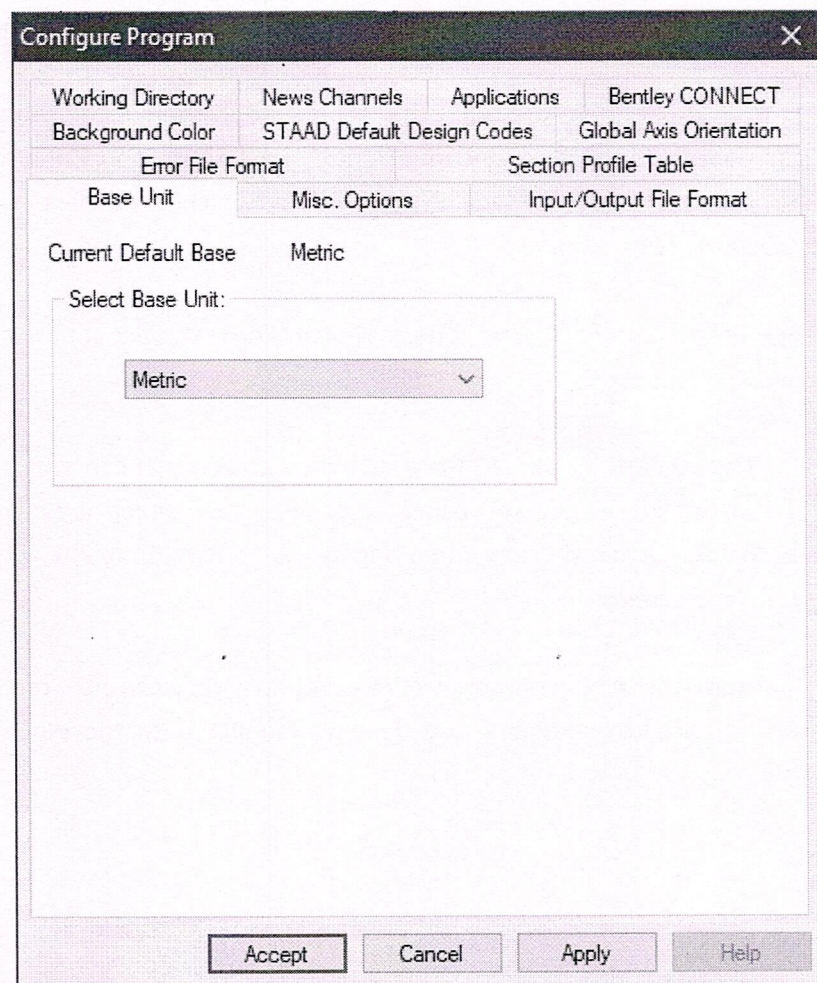
Bentley Connect → it is the environment where we can work with our team at a time.

Base Unit → You can select base units of STAAD for your project.

Input/Output File

Formats → as the name implies you can apply the formats(update the file types or define it) for your project input & output files.

Error File Format → on analysing a structure we get certain errors and some warnings, here we can set limits of maximum Error log.



Section Profile Table → For designing steel we need to access the section tables, every country has different tables we will select Indian Tables or TATA Structures depending on our project and client.

Background Colour → we can keep the background of our working space black or white depending on the time of our work or our mood.

STAAD Default Design Codes → This is the most important thing to note, the **default design codes** in the STAAD after your installation will be **American codes** so we need to go and change it to our Indian Standards or we can select Indian codes at the time of designing the project. We suggest making our codes as default to save our time during design.

Global Axis Orientation → Here we can change the orientation of the axis, actually we can turn the vertical axis to be Y-axis or Z-axis, most of the members prefer Y-axis to be vertical.

Apart from those there are two other tabs. One of them is **Miscellaneous options** in which we can access things like removing Bentley logo from report and the other is **Applications** where you can access Legacy STAAD Editor which was the only tool to enter input of STAAD in past versions.

License Management Tool is where we can know the activation status of our STAAD Pro License.

If you carefully observe the welcome screen you can find a file option in the menu bar. From this File menu you can access every tool which we have discussed so far. This will be helpful when there is some bug in and you are unable to get the above windows on the welcome screen.

From the next chapter we will create a project and start knowing the usage of various tools with examples and become familiar with the working environment of the STAAD.

Chapter 2 | Accessing Work Space

In the previous chapter we have already come across opening a new project. Now let us look at various steps that we have to complete before entering the work space. The first step starts with a model. As soon as we click on New Project, a pop-up window will

appear with the name **New Model**. From here modelling of our project structure begins. The pop-up window is shown in the below snapshot.

New Model

☒ Space
☐ Plane
☐ Floor
☐ Truss

File Name:
Structure 1

Location:
D:\Infrastructure\VBV202107\27001 ...

A SPACE structure, which is a three-dimensional framed structure with loads applied in any plane, is the most general.

Length Units
☐ Inch ☐ Decimeter
☐ Foot ☒ Meter
☐ Millimeter ☐ Kilometer
☐ Centimeter

Force Units
☐ Pound ☐ Newton
☐ KiloPound ☐ DecaNewton
☐ Kilogram ☒ KiloNewton
☐ Metric Ton ☐ MegaNewton

< Back Next > Cancel Help

We will find four checkboxes: Space, Plane, Floor and Truss. We have to select one of them to start modelling our structure. It depends on our project contents and the expected output. If we have to design a building then loads will act from all directions which means that it is in a space. Hence, we have to select the **Space** option.

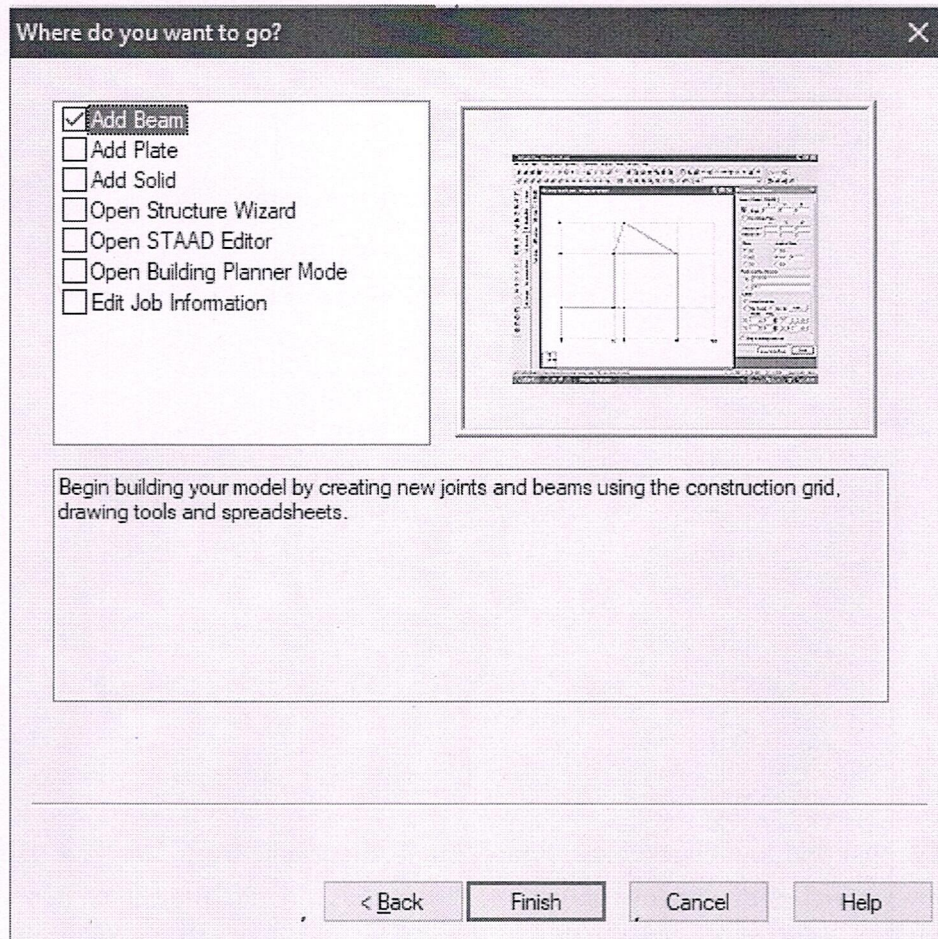
If you are modeling a **Plane** then it means it is a 2-D modelling in which the loads act in the same plane. **Floor** is selected when you are designing such a structure that there are no horizontal loads or displacements and Moment about vertical axis is restrained.

When your structure has all the members which are either subjected to tension or compression but not bending then we opt for **Truss**, as we all know that a truss will have only axial forces in members.

Beside those options we can find options to name our project and select a location to save our project which will be used in future to access. Below these you will find various units for Length and Force. You need to select one from each, you can select any unit system that you are familiar with. As an Engineer we are familiar with calculating forces and everything in meters & KiloNewtons. You can also use a mix unit system like Foot in

length and KiloNewtons in force but you need to keep in mind that the results you obtain will be the same units you opt now and should be confused by mistaking them with meters.

After selecting all the required options for our project we need to proceed further by clicking **Next**. Then a new window will appear asking where we want to go? The window is shown in the below snapshot.



Here we are able to see different ways from where we can start building our model.

2.1. Add Beam

ADD BEAM will take us to a snap node window where we can create geometry of our structure by adding beams. You can add beams by using the cursor and selecting the start and end nodes in the graph displayed as shown in the snapshot below.

By default Snap Node will be in linear mode which means we can model quadrilateral models such as building plans and the default plane will be XY Plane as shown in below snapshot.

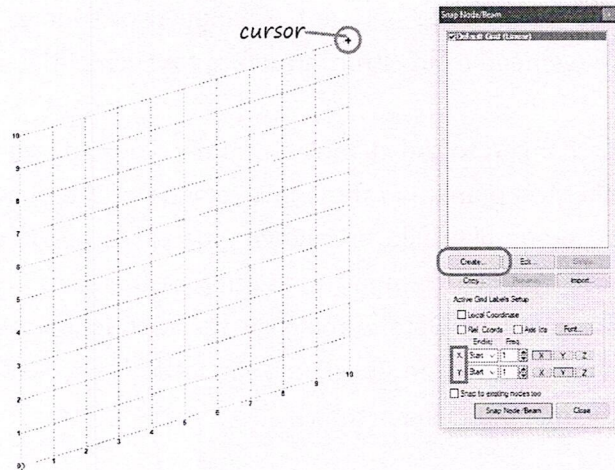
If you are comfortable working in the XY plane then you can create the XY plane section (please note that the Y-axis is vertical in my workspace) of your Model and then can be translated along the Z-Axis to complete our 3D model project. But Practically it is not preferred to use the elevation section of a building to start rather it will be easier to start by drawing the plan of the building or model we need to build and analyse. So we need to change the snap node plane to the XZ Plane which is the horizontal plane for the axis in our workspace.

You can change the mode of the model to **Radial** or **Irregular** and change the plane to whichever plane we need to work on by clicking on the option **Create** in Snap Node Beam Window.

As you can see you will get the pop-up window on clicking the Create option. At the top of all you can change the type of snap node you need like Linear, Radial and Irregular.

When should we use radial and irregular?

Radial, as you guess, is for creating circular models such as Circular Tanks, Stadiums, etc., irregular mode can



Linear

Linear

Name

Plane

☒ X-Y
☐ X-Z
☐ Y-Z

Angle of Plane°

☐ X-X
☒ Y-Y 0
☐ Z-Z

Grid Origin (m)

	X	Y	Z
	0	0	0

Construction Lines

	Left	Right	Spacing m	Skew°
X:	0	10	1	0
Y:	0	10	1	0

OK

Cancel

Help

be used if the models are not rectangular or square. We may come up with irregular plots where we need to construct structure for such options we use irregular snap node mode.

Coming to the changing of plane you can find in the snapshot that there is an option to select the plane and the angle relation of the plane with a certain axis (this is used for sloped areas like hills or valleys where we need to construct the structure on a sloped surface). You can change the spacing of the snap node according to the size of the model you are building. Before doing all these changes don't forget to name the variant you are creating and then on finishing your settings click **OK** you can see the change of the plane and the mode on your screen.

2.2. Structure Wizard

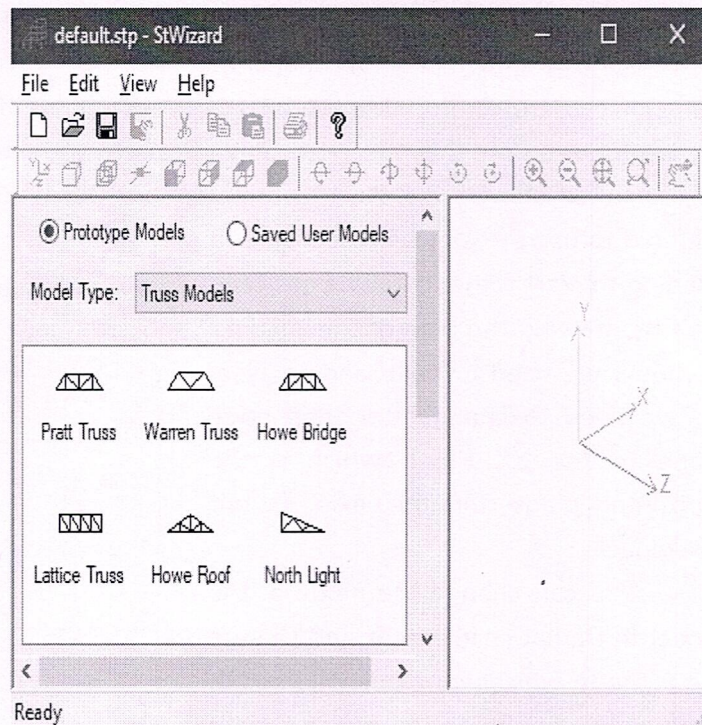
As the name implies, a structure wizard is something that has magical powers and makes your structure modelling simple. As you click on **Finish** after selecting structure wizard, you will be taken to workspace with a pop-up window of structure wizard where you can become a famous wizard like Harry Potter,

Here you can find different prototype models:

- Truss Models
- Frame Models
- Surface/Plate Models
- Solid Models
- Composite Models
- Import CAD Models
- VBA - Macro Models

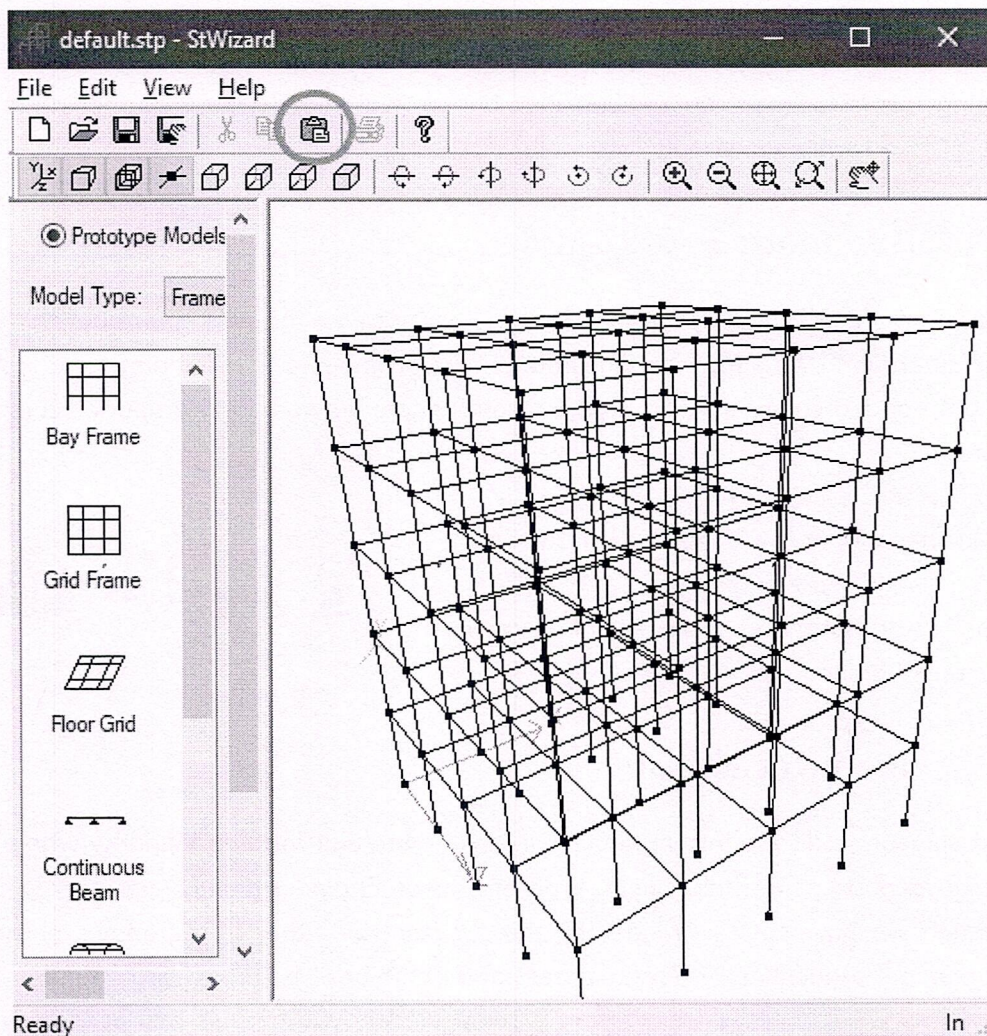
Using the above prototype models we can create simple structures quickly like we can create different trusses as shown in above snapshot. For Instance let us assume we need to create a bay frame then follow below steps:

1. Select **Frame models** in prototype models dropdown.
2. You will be able to see different frame models. Double click on the **Bay frame**.
3. A pop-up appears asking the inputs of length of total span and the number of bays required along the three directions.



As you can see we entered a 12m X 12m plot with 5 storeys with 4 bays on each side. On applying the required lengths and bays a model will be deployed on the structure wizard window.

But we need to have that model on the workspace of modelling to continue on applying properties, loads and design to the structure. So we need to transfer that structure model to the STAAD by clicking the transfer icon on the menu shown in the snapshot below.



On choosing transfer a prompt window will appear asking confirmation to transfer, click Yes and you will land on a

window asking where to paste the model on the workspace. Enter the coordinates where you would like to paste the model and your structure will be transferred successfully to the workspace from where we can do further process of analysing the structure followed by designing.

This is just a Bay frame example, other structures also follow the same procedure but depending on their type the input data of model building may differ.

2.3. STAAD Editor

STAAD Editor will take you to the Input editor where we can write the entire modelling in the form of coding. This was the only way to use STAAD in the past but later to erase the use of STAAD all tools were developed to draft the model with cursor so that the staad will take the input as you model it on the workspace.

Using this is far more time killing part but we will know what is happening in the backstage of staad while we are playing cursor on the front end.

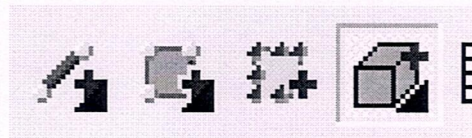
2.4. Add Plate & Add Solid

Add Plate/ Add Solid Options work the same way as the **Add Beam** but the only thing that differs is in **Add Plate** a four nodded cursor appears to draw plate and in **Add Solid** a eight nodded cursor appears to draw solid where as we had two nodded cursor in **Add Beam**.

First Icon in snapshot above is **Add Beam** Cursor

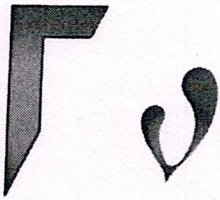
Second Icon is **Add Plate** cursor

Fourth Icon is **Add Solid** Cursor where Third cursor is **Add Surface** Cursor.



2.5. Job Information

On selecting Edit Job Information it will take us to edit Job Info Window where we can enter description of the Job, Client, type of project, Engineer details, approver Details etc., and then we have to start modelling the structure by either of the above methods. Here you may get a question of how to access add Beam or Structure wizard after entering workspace? Yes we can access them from workspace. We will discuss that in the coming chapter 3, Modelling Tools.



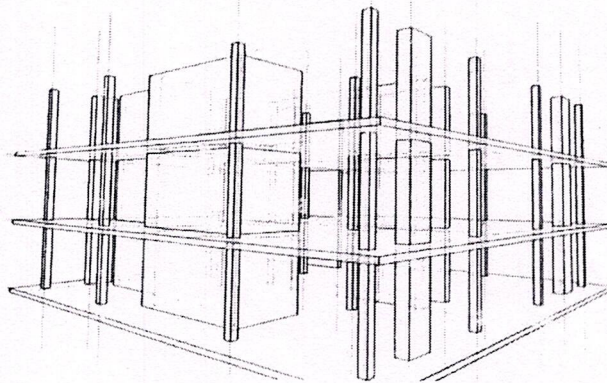
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CERTIFICATE OF COURSE COMPLETION

Design & Analysis of RCC Structures



Name: **Mr. KALUVA GURU VINOD**

Course: **Computer Aided Design &
Analysis of RCC Structures.**

Platform: **STAAD Pro.**

Course Duration: **30 Hours.**

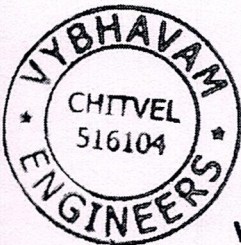
From **19/09/2021** to **24/10/2021.**

Percentage: **50.80%.**

Grade Achieved: **C.**

Instructor: **K L V Saivardhan Reddy**

Certificate Number: **VSEP2021003.**



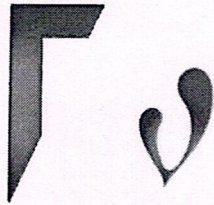
k. Maulika.
S. Moulika 23/11/2021
Managing Partner
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Dr. N. Amaranatha Reddy
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HOD, Civil Engineering Department,
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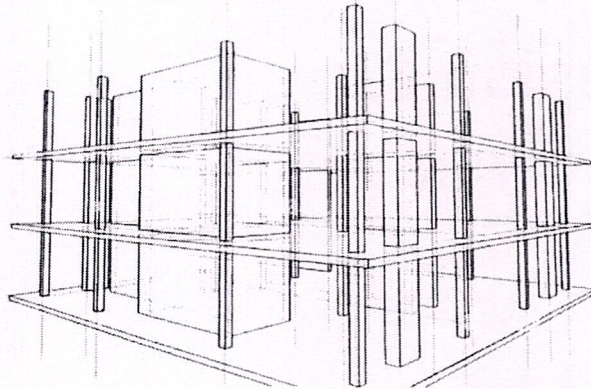
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CERTIFICATE OF COURSE COMPLETION

Design & Analysis of RCC Structures



Name: **Mr. PANDEETI KASANNA**

Course: **Computer Aided Design &
Analysis of RCC Structures.**

Platform: **STAAD Pro.**

Course Duration: **30 Hours.**

From **19/09/2021** to **24/10/2021.**

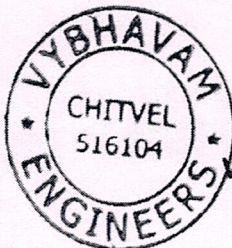
Percentage: **52.54%.**

Grade Achieved: **C.**

Instructor: **K L V Saivardhan Reddy**

Certificate Number: **VSEP2021007.**

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S. Moulika *23/11/2021*
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Dr. N. Amaranatha Reddy
HOD, Civil Engineering Department,
K.S.R.M. College of Engineering

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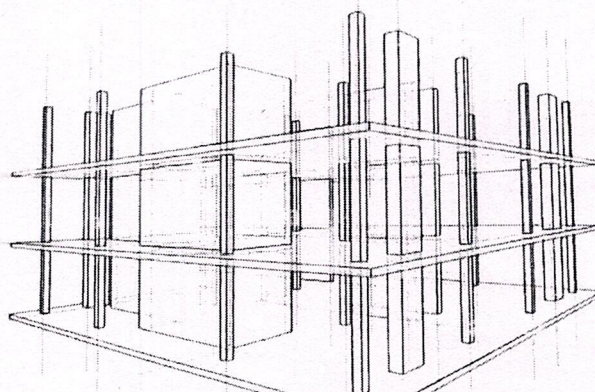
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Design & Analysis of RCC Structures



Name: **Mr. KASHETTY VENKATESWARLU**

Course: **Computer Aided Design &
Analysis of RCC Structures.**

Platform: **STAAD Pro.**

Course Duration: **30 Hours.**

From **19/09/2021** to **24/10/2021.**

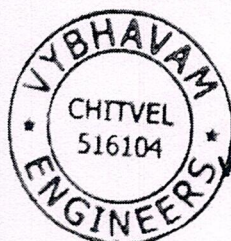
Percentage: **64.31%.**

Grade Achieved: **B.**

Instructor: **K L V Saivardhan Reddy**

Certificate Number: **VSEP2021008.**

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S. Moulika 28/11/2021
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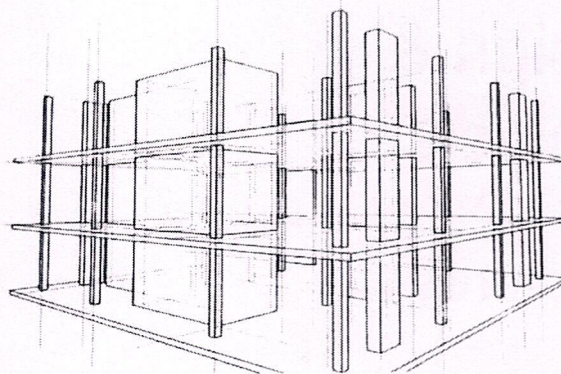
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Design & Analysis of RCC Structures



Name: **Mr. CHINTHAKUNTA MAHESH BABU**

Course: **Computer Aided Design &
Analysis of RCC Structures.**

Platform: **STAAD Pro.**

Course Duration: **30 Hours.**

From **19/09/2021** to **24/10/2021.**

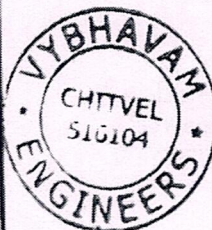
Percentage: **75.35%.**

Grade Achieved: **A.**

Instructor: **K L V Saivardhan Reddy**

Certificate Number: **VSEP2021009.**

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