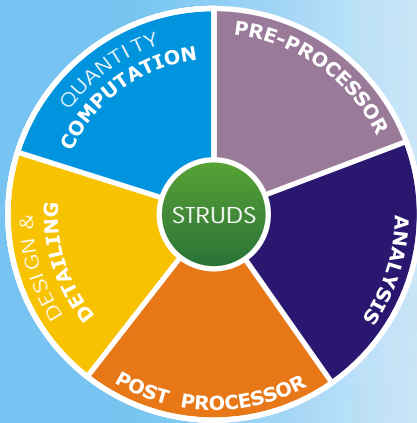


Structural Analysis, Design & Detailing Software



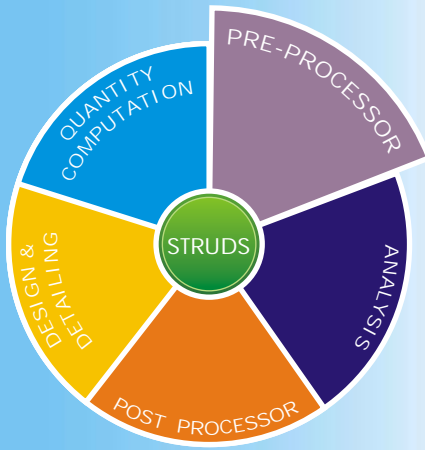
NOW FEATURED WITH :

- ▶ Modelling, Analysis, Design & Detailing of Shear Walls
- ▶ T and L shaped columns Modeling, Analysis, Design & Detailing
- ▶ Enhanced detailing as per SP-34
- ▶ Improved Graphical User Interface
- ▶ 3D rendering view for better understanding

SALIENT FEATURES

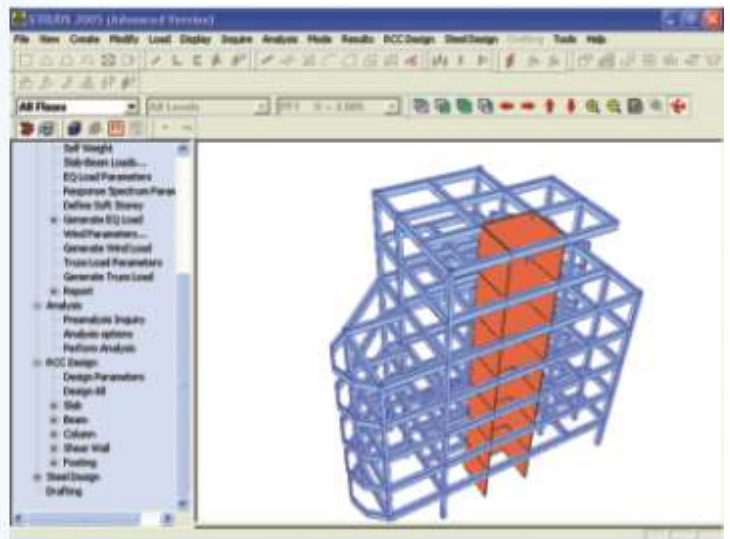
PRE-PROCESSOR

- ▶ Extremely easy modelling of building floorwise, objectwise.
- ▶ Modelling objects include slabs, beams, columns, shear walls.
- ▶ Irregular shaped slabs/ Flat slabs.
- ▶ T, L shaped columns and \Rightarrow , L and \square shape shear wall are unique features.
- ▶ Isolated / Combined / Raft / Pile foundations, pinned or fixed at the base.
- ▶ Area / Line / Point loads on slab.
- ▶ Uniform / Non-uniform / Point / Wedge / Triangular / Trapezoidal loads on beams.
- ▶ Automatic generation of Slab-Beam loading and Wall loading.
- ▶ Automatic generation of Seismic loads as per IS : 1893-2002.
- ▶ Automatic generation of wind loads as per IS : 875
- ▶ Consideration of Vertical Seismic loads in design of horizontal cantilevers
- ▶ In-built load combinations to find the envelope.
- ▶ Automatic generation of 2D and 3D frames from the floor plans.
- ▶ Import of drawings in DXF format.
- ▶ Interface to create STAAD input file.

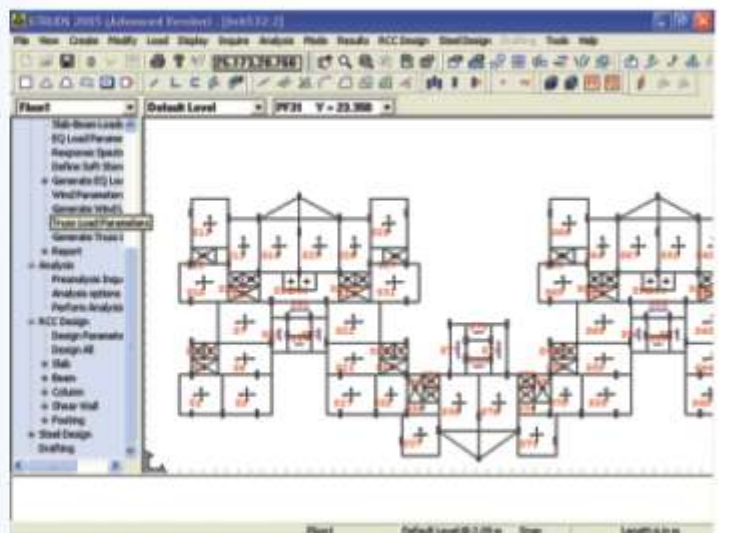


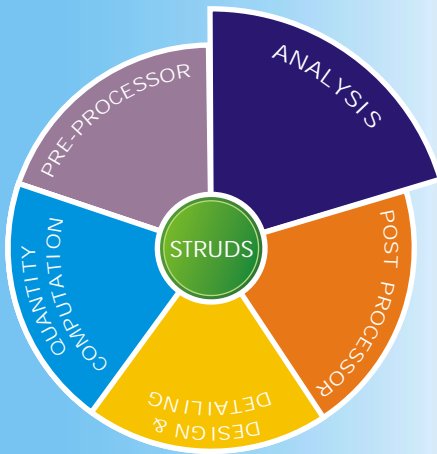
User friendly Graphical Interface for Modeling the Building

Automatically generated 3D Solid View from Floor Plans



2D Floor Plan View at different Floor Levels

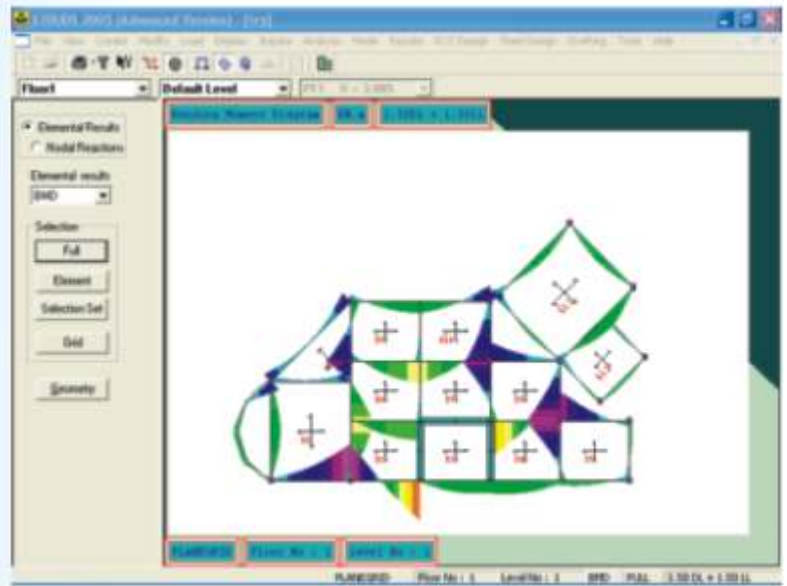




Finite Element Based Static and Response Spectrum Analysis.

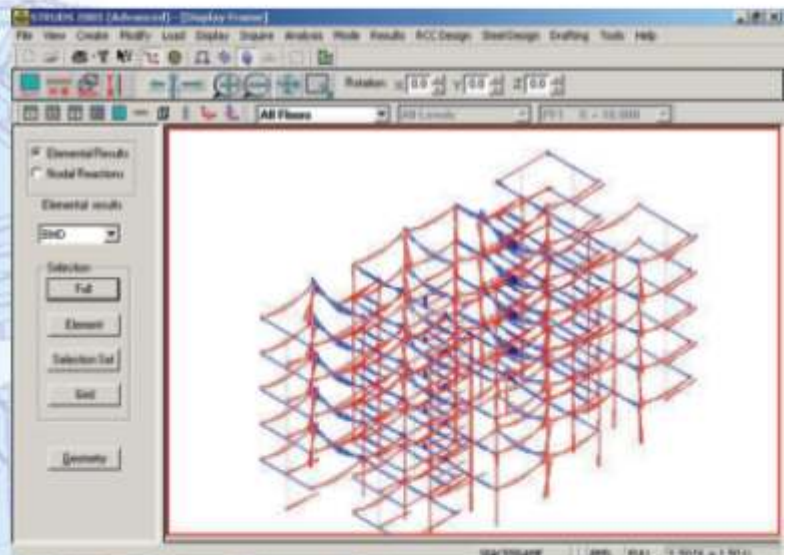
ANALYSIS

- ▶ Building could be idealized as floor-grids, a set of plane frames or entire 3D space frame
- ▶ 3D frames static analysis including shear wall analysis
- ▶ Response Spectrum Analysis with IS Code predefined spectra
- ▶ Rigid Floor-Diaphragm Action, Soft Storey effect
- ▶ Torsion effect due to eccentricity in Centre of mass and Centre of Stiffness taken in to consideration
- ▶ Front width optimization for faster analysis

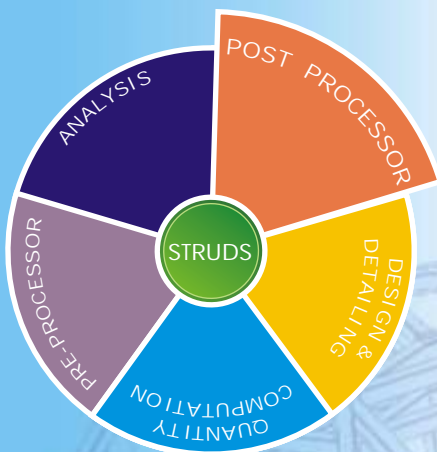


POST PROCESSOR

- ▶ BMD / SFD / Axial / Torsion / Support Reaction / Deflection / Free body diagrams.
- ▶ Diagrams visualization in Floor / Plane Frame / Space Frame.
- ▶ Diagrams represented in Contour view.
- ▶ Detailed Analysis reports.
- ▶ Shear Wall Analysis reports.



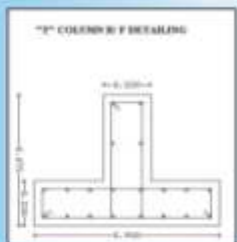
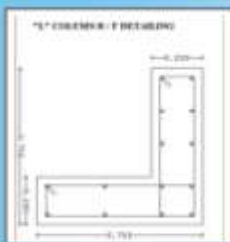
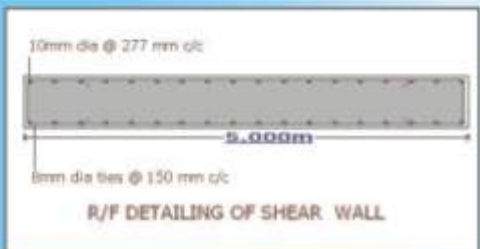
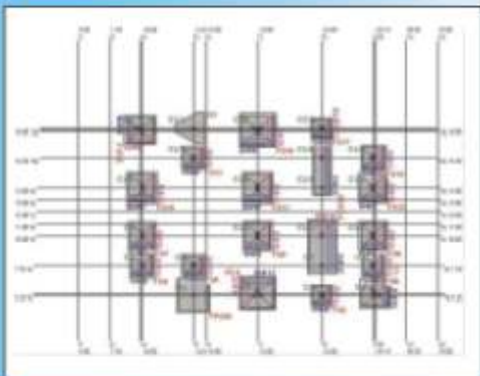
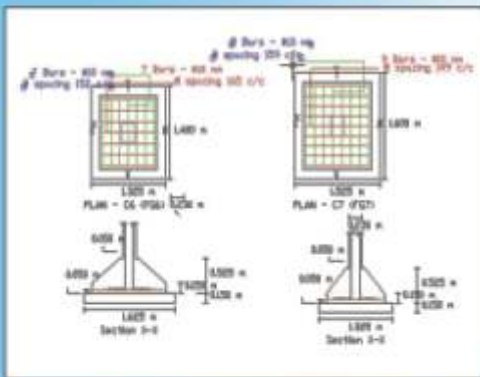
Visualization of Analysis Results.



View the Structural Behavior under different load combinations.

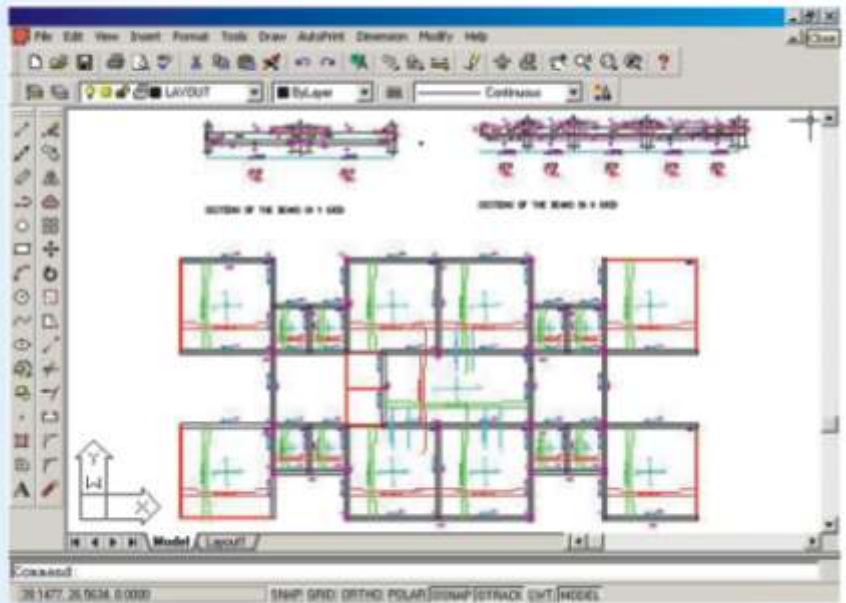


Seamlessly
Integrated Design
based on IS and BS codes.



DESIGN & DETAILING

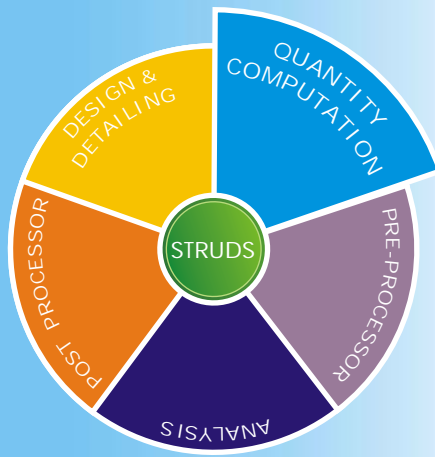
- ▶ Design Of Regular One Way / Two Way / Flat / Cantilever Slabs.
- ▶ Design of Singly / Doubly / Reinforced beams as rectangular, T or L shaped.
- ▶ Design of \square , \circ , T , L shaped columns as Axial, Uniaxial & Biaxial design.
- ▶ Design of isolated, Combined footings, Raft and Pile foundations.
- ▶ Design of — , L , C shaped Shear Walls.
- ▶ Detail step-by-step design reports as per relevant IS Code Clauses.
- ▶ Ductile Detailing of Structural Components as per IS : 13920-1993.
- ▶ Detail design drawings as per SP-34.
- ▶ Export drawings in DXF format to any CAD Software.
- ▶ Bar bending schedules produced.



BEAM DESIGN SCHEDULE for Floor 1 Default Level
As Per IS 456 : 2000

Group	Beams	Size in mm	St	Bottom Bars/Cut-off	Top
B01	B1	230 * 300	2F16	---	---
B02	B2	230 * 300	2F12	---	---
B03	B3	230 * 300	2F16	---	---
B04	B4	230 * 300	2F12	---	---
B05	B5	230 * 300	2F12	---	---
B06	B6	230 * 300	2F12	---	---
B07	B7	230 * 300	2F12	---	---
B08	B8	230 * 300	2F12	1F12	0.08L
B09	B9	230 * 300	2F12	1F12	0.08L

Ductility detailing provisions as per IS : 13920-1993 and SP-34.



Concrete and Steel Quantities.

QUANTITY COMPUTATION

- ▶ Computation of quantities of concrete and steel.
- ▶ Grade wise / Diameter wise breakup of steel produced.
- ▶ Seamless integration with QE-Pro™ (Quantity Estimation & Project Management Software of SoftTech.

Slab No	Description	Size (mm)	Grade	Length (mm)	Slab Length (mm)	Total Length (mm)	Weight (kg)	Unit
001	Main Steel	8	0	4000	2700	24270	21.04	Pc/10
	Char/Top Steel	8	0	4070	2700	27420	22.07	Pc/10
	Temperature Steel(Left)	8	0	3000	2	6000	0.50	Pc/10
	Temperature Steel(Right)	8	0	3000	2	6000	0.50	Pc/10
	Temperature Steel(Top)	8	0	3400	2	6800	0.55	Pc/10
	Temperature Steel(Corner)	8	0	3400	2	6800	0.55	Pc/10
002	Main Steel	8	0	4070	2700	26700	22.97	Pc/10
	Char/Top Steel	8	0	4120	2700	27420	23.07	Pc/10
	Temperature Steel(Left)	8	0	3000	4	12000	1.00	Pc/10
	Temperature Steel(Right)	8	0	3000	4	12000	1.00	Pc/10
	Temperature Steel(Top)	8	0	3400	4	13600	1.15	Pc/10
	Temperature Steel(Corner)	8	0	3400	4	13600	1.15	Pc/10
003	Main Steel	8	0	3700	2700	24300	20.90	Pc/10
	Char/Top Steel	8	0	4224	2700	31540	26.45	Pc/10
	Temperature Steel(Left)	8	0	3000	2	6000	0.50	Pc/10
	Temperature Steel(Right)	8	0	3000	2	6000	0.50	Pc/10

REPORTS

Detail Design Reports with step by step Calculations

Check For Section Capacity:
Modal Check Calculations:
 For X axis:
 $P_{ult} = 30 \text{ kN}$
 $M_{ult} = P_{ult} \times L_{cr(Trans)} = 240.30 \text{ kN} \times P_{cr}$ Hence OK.
 $M_{ult} = M_{ult} + M_{cr(Trans)} = 90.46 \text{ kN-m}$
 For Y axis:
 $P_{ult} = 623 \text{ kN}$
 $M_{ult} = P_{ult} \times L_{cr(Trans)} = 249.41 \text{ kN} > P_{cr}$ Hence OK.
 $M_{ult} = M_{ult} + M_{cr(Trans)} = 1857.24 \text{ kN-m}$
 For $P_{cr} / P_{ult} \leq 0.2, \alpha = 1.0$
 For $P_{cr} / P_{ult} > 0.2, \alpha = 2.0$
 For $P_{cr} / P_{ult} = 0.036, \alpha = 1.000$
 $(M_{ult} / M_{y15}^{\alpha}) + (M_{ult} / M_{y15}^{\alpha})$
 $= (0.84 / 98.46)^{1.000} + (142.62 / 1007.24)^{2.000}$
 $= 0.121 < 1.0$, Hence OK.
 Shear wall Design parameter as per IS 13920 (1993) Annex A (Clause 9.3.1)

ρ	ρ	ρ	ρ	ρ	ρ	ρ	ρ	ρ	ρ
0.00	0.52	0.08	0.82	0.20	0.66	0.34	0.15	0.06	0.13

Moment Capacity = 0.040
 $M_{ult} \leq M_{cr} = 1072.800 \text{ kN-m}$
 $M_{ult} \leq M_{cr}$ section is safe.

IS Code clauses wise Detail Reports

Detailing Provisions as per IS 13920:2003

4.1 General:
 Clause 4.1.1: Provided Anchorage = 0.000 (max) = 0.10L.
 Clause 4.1.2: Width in Depth Ratio = 0.201.
 Width in Depth Ratio is more than 0.2 hence ok.
 Clause 4.1.3: Width of the beam = 230.
 Provided Width of the beam is more than 200 and hence ok.
 Clause 4.1.4: Depth of the beam = 0.400m.
 Provided Depth of the beam is more than 1/4 of clear span (1000) hence ok.

4.2 Longitudinal Reinforcement:
 Clause 4.2.1: Maximum longitudinal ratio on any face at any section = 0.200 (max) (1000) hence ok.
 Maximum longitudinal ratio on any face at any section = 0.006.
 Provided longitudinal reinforcement ratio on any face at any section = 0.006 < 0.006 hence ok.
 Clause 4.2.2: Provided minimum transverse steel ratio on any face at any section = 0.004 + 0.012 (max) (1000) hence ok.
 Clause 4.2.3: Maximum negative steel provided at top face of left joint = 400 (max) (1000) hence ok.
 Maximum positive steel provided at top face of right joint = 300 (max) (1000) hence ok.
 Provided steel on bottom face of left joint = 300 (max) (1000) hence ok.
 Provided steel on bottom face of right joint = 300 (max) (1000) hence ok.
 Clause 4.2.4: Provided minimum steel on bottom face at any section = 300 (max) (1000) hence ok (1000) hence ok.
 Provided minimum steel on top face at any section = 200 (max) (1000) hence ok (1000) hence ok.

4.3 Web Reinforcement:
 Clause 4.3.1: Provided maximum Dia of stirrup = 8mm < 8mm (for span greater than 1000) hence ok.
 Clause 4.3.2:



