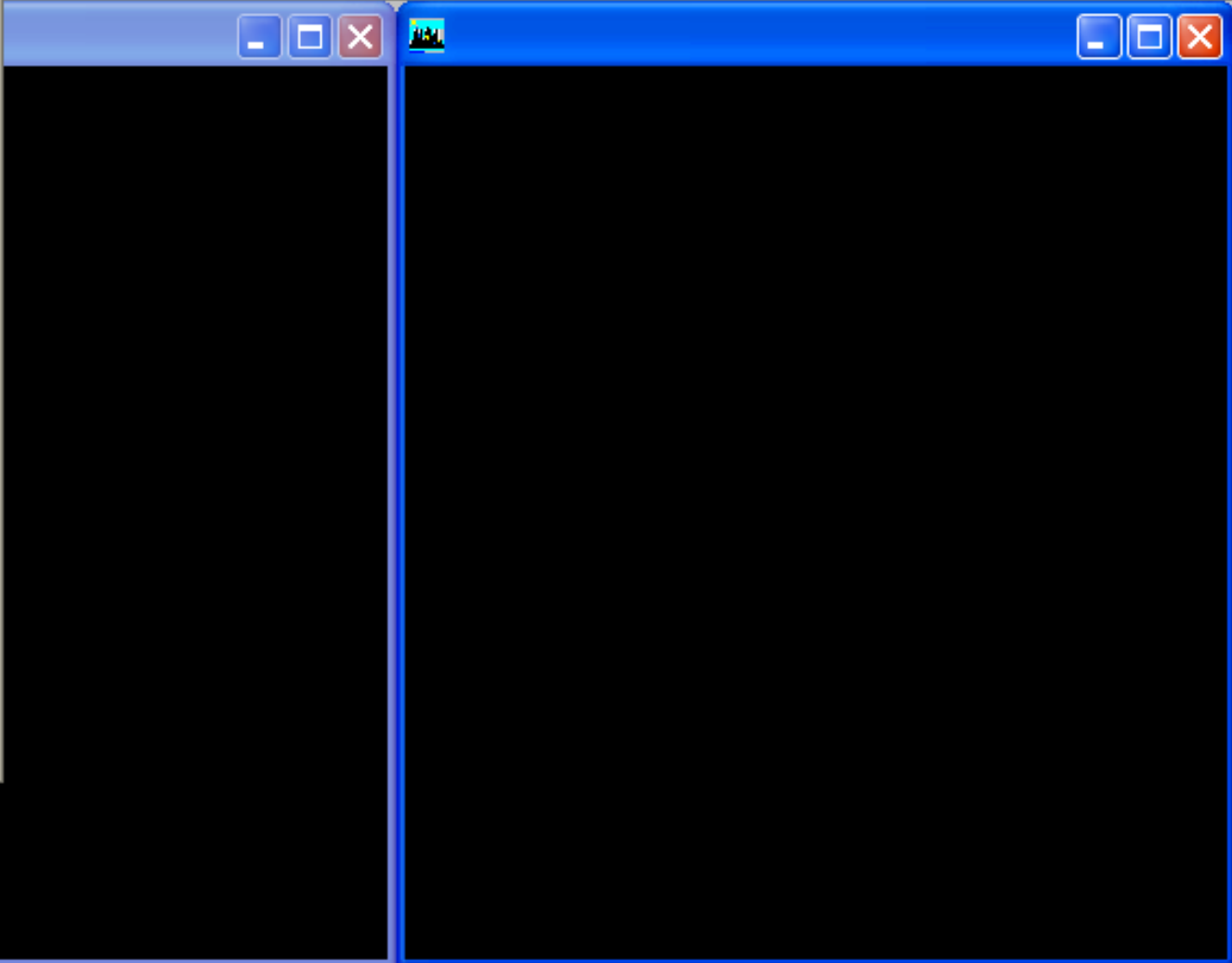


**Modelling, analysis and
designing of a structure using
ETABS**

- New Model... Ctrl+N
- Open ... Ctrl+O
- Save Ctrl+S
 - Save As...
- Import
- Export
- Create Video...
- Print Setup...
- Print Preview for Graphics...
- Print Graphics Ctrl+P
- Print Tables...
- Capture Enhanced Metafile
- Capture Bitmap
- Modify/Show Project Information...
- User Comments and Session Log...
- Last Analysis Run Log...
- Display Input/Output Text Files...
- Delete Analysis Files
- Exit



Give grid data and story dimensions

ETABS Nonlinear v8.05 - (Untitled)

File Edit View Define Draw Select Assign Analyze Display Design Options Help

Building Plan Grid System and Story Data Definition

Grid Dimensions (Plan)

- Uniform Grid Spacing
 - Number Lines in X Direction: 4
 - Number Lines in Y Direction: 4
 - Spacing in X Direction: 288.
 - Spacing in Y Direction: 288.
- Custom Grid Spacing
 - Grid Labels...
 - Edit Grid...

Story Dimensions

- Simple Story Data
 - Number of Stories: 3
 - Typical Story Height: 126.
 - Bottom Story Height: 132.
- Custom Story Data [Edit Story Data...](#)

Units: lb-in

Add Structural Objects

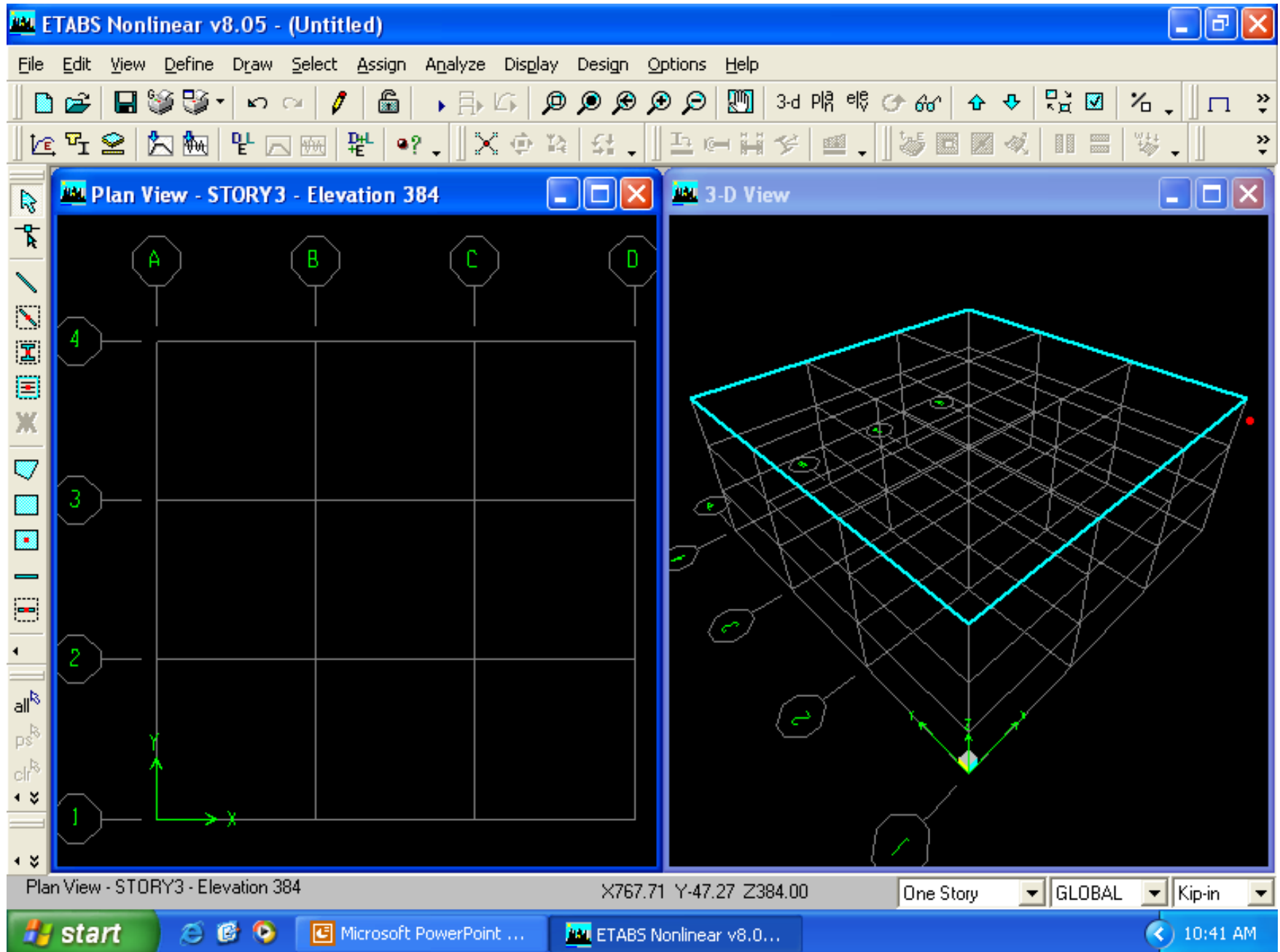
- Steel Deck
- Staggered Truss
- Flat Slab
- Flat Slab with Perimeter Beams
- Waffle Slab
- Two Way or Ribbed Slab
- Grid Only**

OK Cancel

Ready

start Microsoft PowerPoint ... ETABS Nonlinear v8.0... 10:40 AM

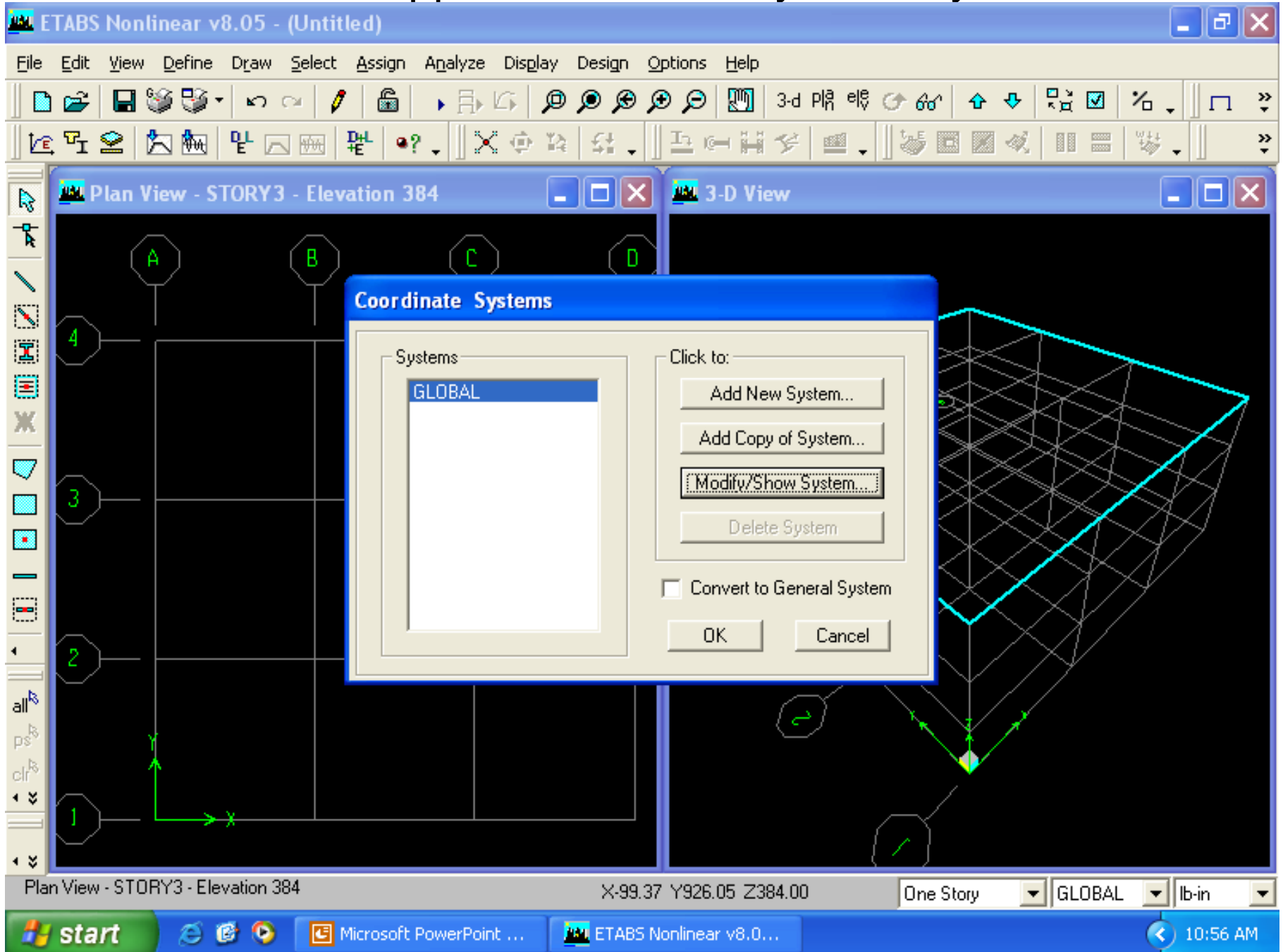
This figure will appear



For giving global coordinates for grid from edit menu

The screenshot displays the ETABS Nonlinear v8.05 software interface. The main window is titled "ETABS Nonlinear v8.05 - (Untitled)". The menu bar includes File, Edit, View, Define, Draw, Select, Assign, Analyze, Display, Design, Options, and Help. The "Edit" menu is open, showing options such as Undo Grid Edit (Ctrl+Z), Redo (Ctrl+Y), Cut (Ctrl+X), Copy (Ctrl+C), Paste... (Ctrl+V), and Delete. The "Edit Grid Data" option is selected, and its sub-menu is visible, containing "Edit Grid...", "Add Grid at Selected Points...", "Glue Joints to Grid Line", and "Lock OnScreen Grid System Edit" (checked). The 3-D View window shows a 3D model of a structure with a grid system overlaid. The status bar at the bottom indicates coordinates X538.02 Y966.24 Z384.00, a One Story model, GLOBAL coordinates, and a unit of lb-in. The Windows taskbar at the bottom shows the Start button and open applications: Microsoft PowerPoint and ETABS Nonlinear v8.05. The system clock shows 10:43 AM.

This will appear, click “modify/show system”



Now click x-grid for x-coordinates and click y-grid for y-coordinates

The screenshot shows the ETABS Nonlinear v8.05 software interface. The main window displays a 3D view of a structure. A dialog box titled "GLOBAL Coordinate System - Define X Grid" is open, allowing the user to define the X-grid. The dialog includes a table for grid lines, display options, and a 3D view of the structure.

Grid ID	Coordinate
1	A
2	B
3	C
4	D
5	E
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	

Display options:

- X Grid Y Grid
- Display Grid as: Ordinates Spacing
- Units: Kip-in

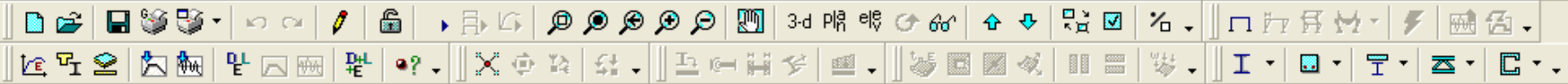
Grid Line # 1 options:

- Primary Line
- Secondary Line
- Hide Grid Line
- Switch Bubble Loc.
- Color: [Color Selection]

Additional options:

- Hide All Grid Lines
- Glue to Grid Lines
- Bubble Size: 86.4
- Reset to Default Color

Buttons: OK, Cancel



GLOBAL Coordinate System - Define Y Grid

Edit View

	Grid ID	Coordinate
1	1	0.
2	2	72.
3	3	267.
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		

Grid Line # 1

Primary Line
 Secondary Line

Hide Grid Line
 Switch Bubble Loc.

Color

Hide All Grid Lines
 Glue to Grid Lines

Bubble Size

Display

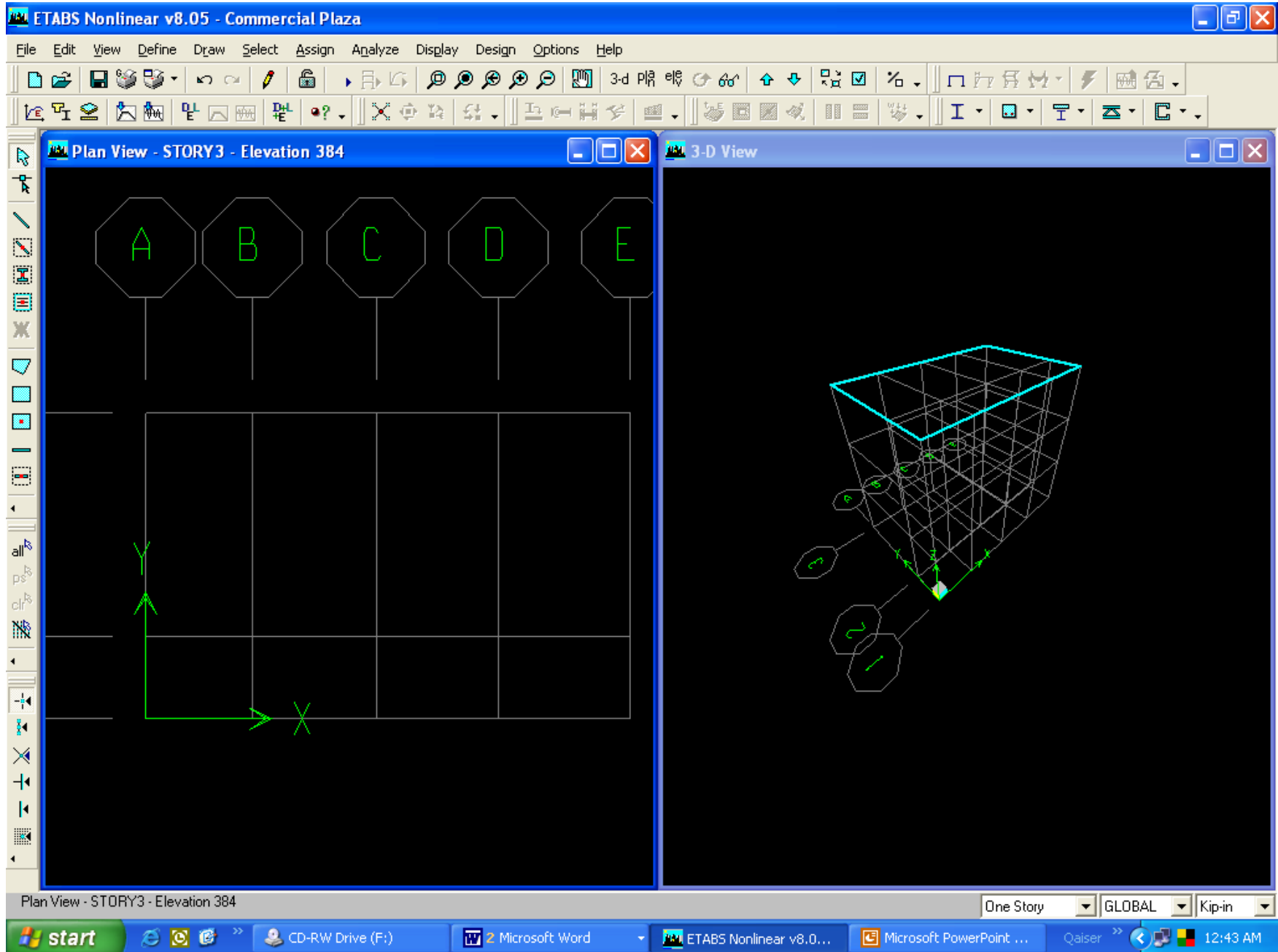
X Grid Y Grid

Display Grid as

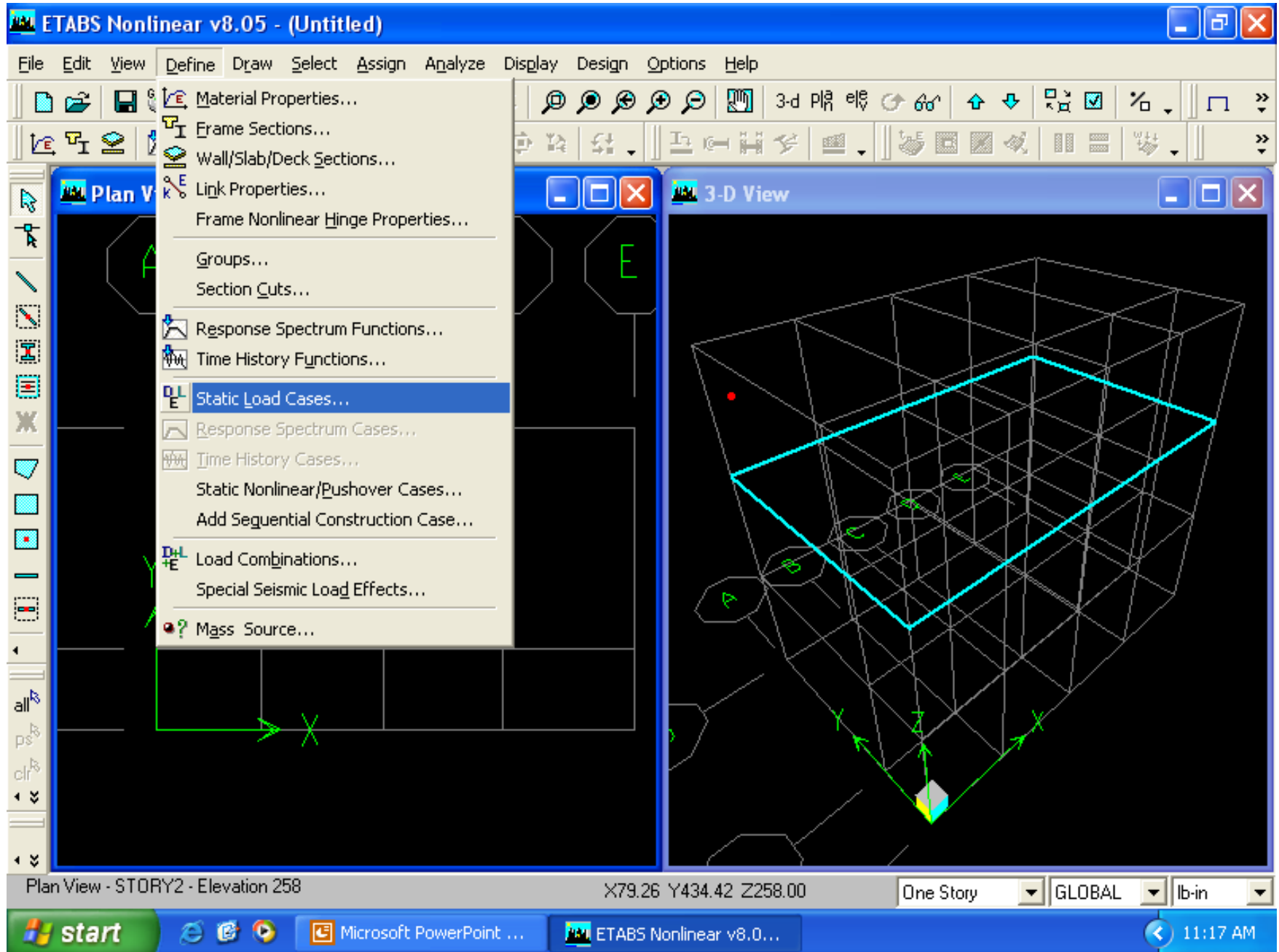
Ordinates Spacing

Units

Final grid dimensions are appearing



Define load cases from define menu



This will appear

ETABS Nonlinear v8.05 - (Untitled)

File Edit View Define Draw Select Assign Analyze Display Design Options Help

Plan View - STORY2 - Elevation 258 3-D View

Define Static Load Case Names

Loads

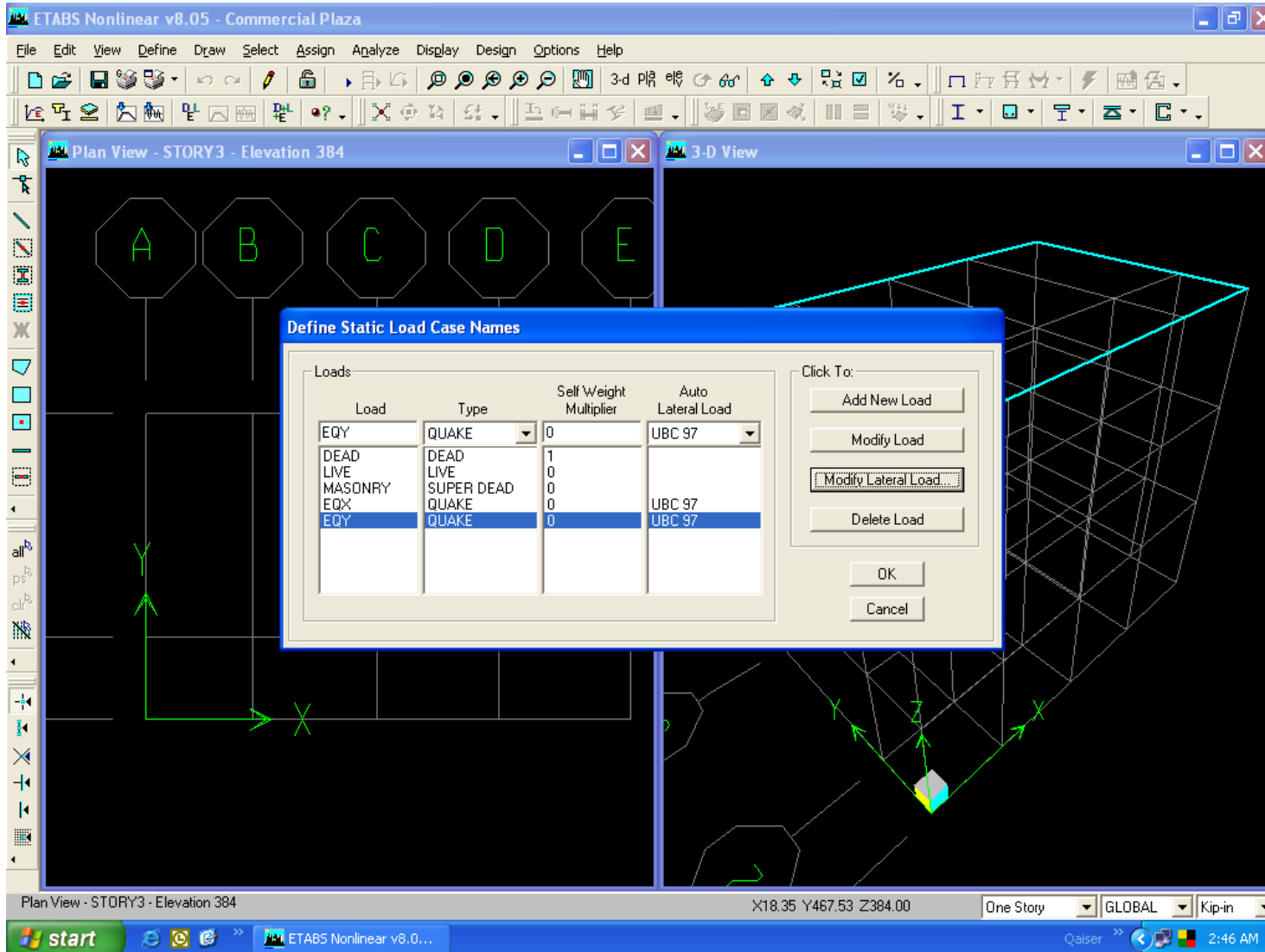
Load	Type	Self Weight Multiplier	Auto Lateral Load
DEAD	DEAD	1	
DEAD	DEAD	1	
LIVE	LIVE	0	

Click To:

- Add New Load
- Modify Load
- Modify Lateral Load...
- Delete Load
- OK
- Cancel

Plan View - STORY2 - Elevation 258 Microsoft PowerPoint - [ETabs2] One Story GLOBAL lb-in 11:18 AM

In “load” write loads and in “type” write nature of load, in “self weight multiplier” write factors, in “auto lateral load” select the code year, then it will apply that year cases. From “add new load” and “delete load” you can add or delete loads in “load” column.



After writing every “load” and “type” click “modify load”

ETABS Nonlinear v8.05 - (Untitled)

File Edit View Define Draw Select Assign Analyze Display Design Options Help

Plan View - STORY2 - Elevation 258 3-D View

Define Static Load Case Names

Load	Type	Self Weight Multiplier	Auto Lateral Load
EQY	QUAKE	0	UBC 97
DEAD	DEAD	1	
LIVE	LIVE	0	
MASONRY	SUPER DEAD	0	
EQX	QUAKE	0	UBC 97
EQY	QUAKE	0	UBC 97

Click To:

- Add New Load
- Modify Load**
- Modify Lateral Load...
- Delete Load

OK Cancel

Plan View - STORY2 - Elevation 258 X49.74 Y452.69 Z258.00 One Story GLOBAL lb-in

start Microsoft PowerPoint ... ETABS Nonlinear v8.0... 11:43 AM

Details of seismic code by click “modify lateral loads”

The screenshot displays the ETABS Nonlinear v8.05 - Commercial Plaza interface. The main window shows a 3D view of a building structure. A dialog box titled "1997 UBC Seismic Loading" is open, allowing users to configure seismic analysis parameters. The dialog is divided into several sections:

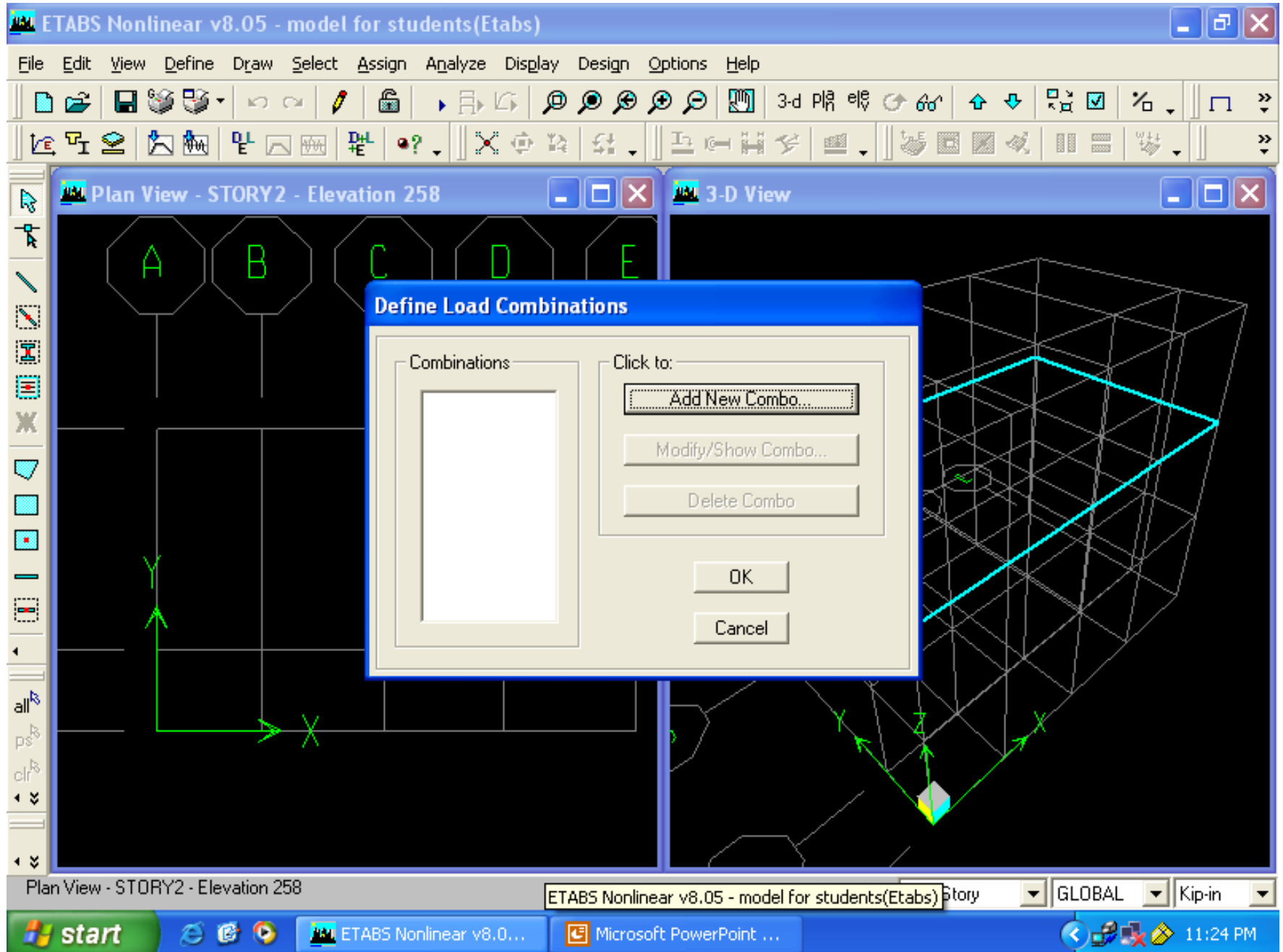
- Direction and Eccentricity:** Radio buttons for X Dir, Y Dir, X Dir + Eccen Y, Y Dir + Eccen X, X Dir - Eccen Y, and Y Dir - Eccen X. A text field for "% Eccen (all Diaphragms)" and an "Override Eccentricities" button.
- Seismic Coefficients:** Radio buttons for Per Code and User Defined. Fields for Soil Profile Type (SC), Seismic Zone Factor (0.30), User Defined Ca (0.33), and User Defined Cv (0.45).
- Time Period:** Radio buttons for Method A, Program Calc, and User Defined. Fields for Ct (ft) = 0.035 and T =.
- Near Source Factor:** Radio buttons for Per Code and User Defined. Fields for Seismic Source Type, Dist. to Source (km), User Defined Na, and User Defined Nv.
- Story Range:** Dropdown menus for Top Story (STORY3) and Bottom Story (BASE).
- Factors:** Fields for Overstrength Factor, R (8.5) and Importance Factor I (1).

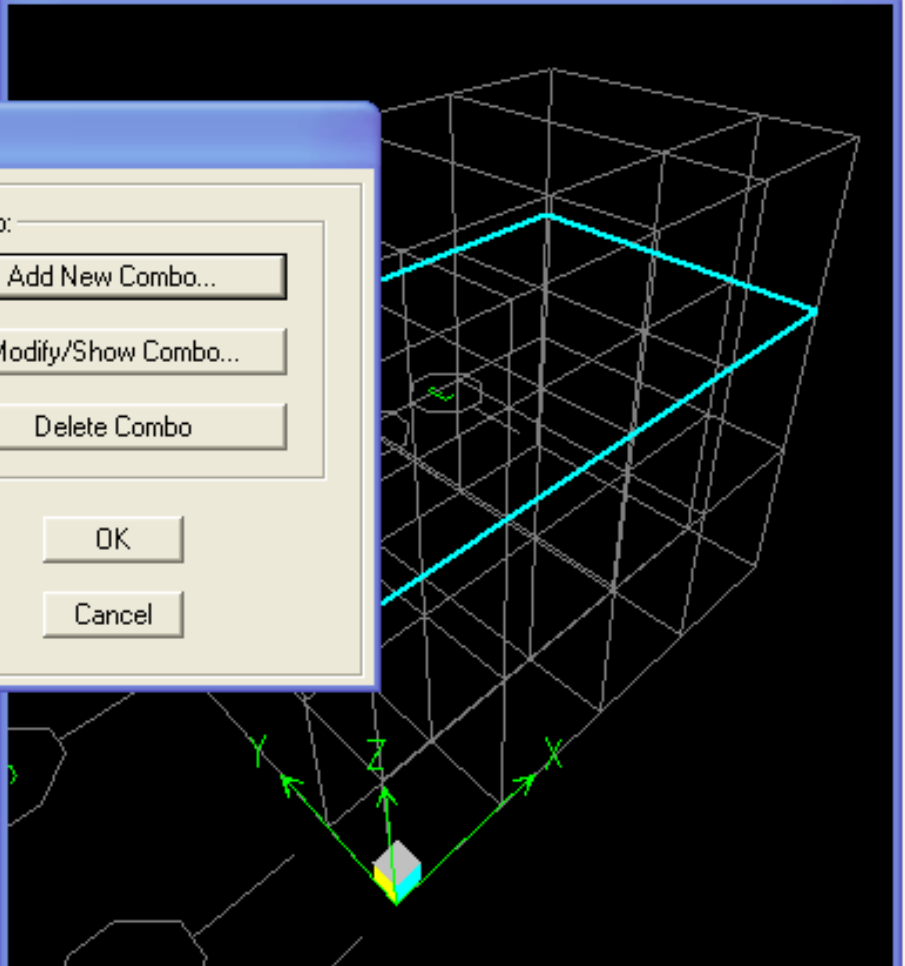
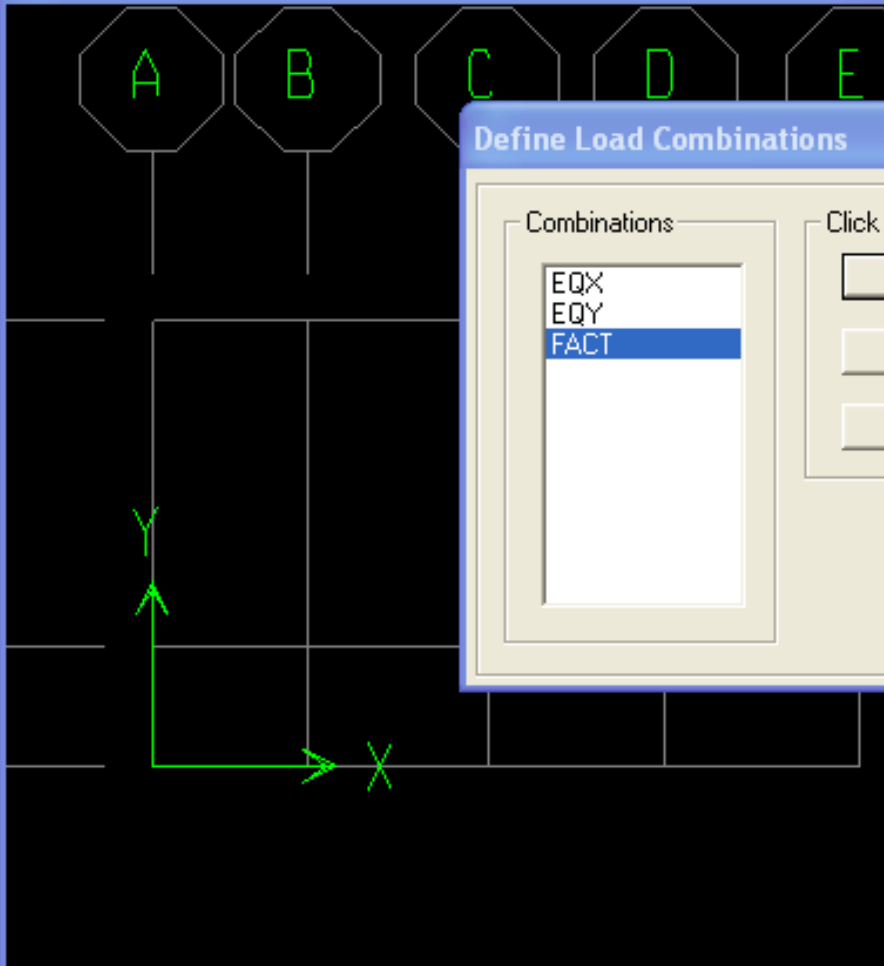
Buttons for "OK" and "Cancel" are located at the bottom of the dialog. The background shows a 3D model of a building with a grid and axes (X and Y) visible.

Define load combinations

The screenshot displays the ETABS Nonlinear v8.05 software interface. The main window title is "ETABS Nonlinear v8.05 - model for students(Etabs)". The menu bar includes File, Edit, View, Define, Draw, Select, Assign, Analyze, Display, Design, Options, and Help. The "Define" menu is open, showing options such as Material Properties..., Frame Sections..., Wall/Slab/Deck Sections..., Link Properties..., Frame Nonlinear Hinge Properties..., Groups..., Section Cuts..., Response Spectrum Functions..., Time History Functions..., Static Load Cases..., Response Spectrum Cases..., Time History Cases..., Static Nonlinear/Pushover Cases..., Add Sequential Construction Case..., Load Combinations... (highlighted), Special Seismic Load Effects..., and Mass Source... The 3-D View window shows a 3D wireframe model of a building structure with a cyan rectangular selection box around a portion of the upper floor. The status bar at the bottom indicates "Plan View - STORY2 - Elevation 258" and coordinates "X59.58 Y417.55 Z258.00". The Windows taskbar at the bottom shows the start button, icons for Internet Explorer, ETABS Nonlinear v8.0..., and Microsoft PowerPoint, along with the system clock showing 11:22 PM.

Click "Add new combo" for defining combinations of loads





Define Load Combinations

Combinations

- EQX
- EQY
- FACT**

Click to:

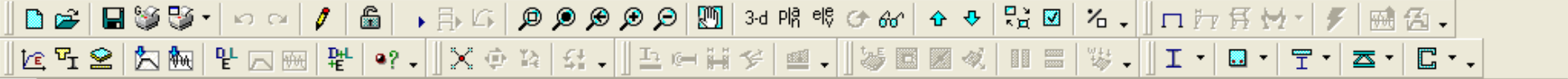
Add New Combo...

Modify/Show Combo...

Delete Combo

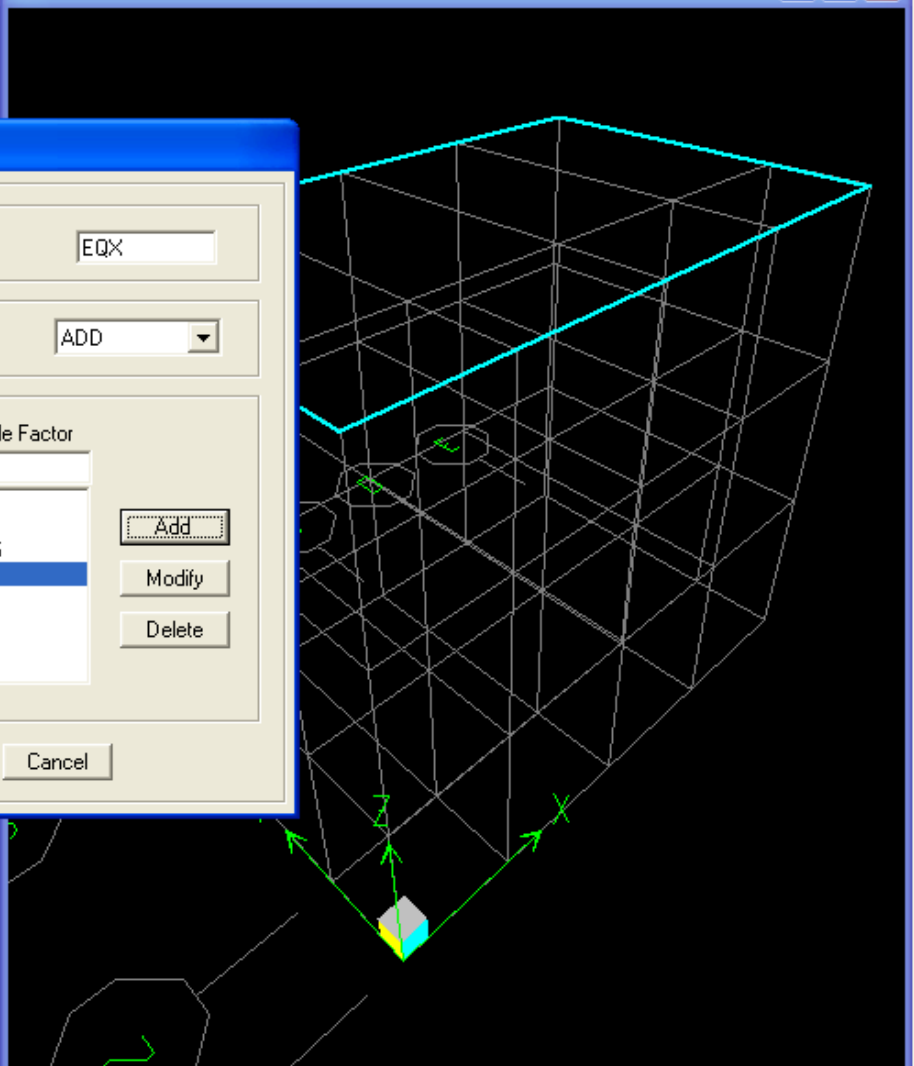
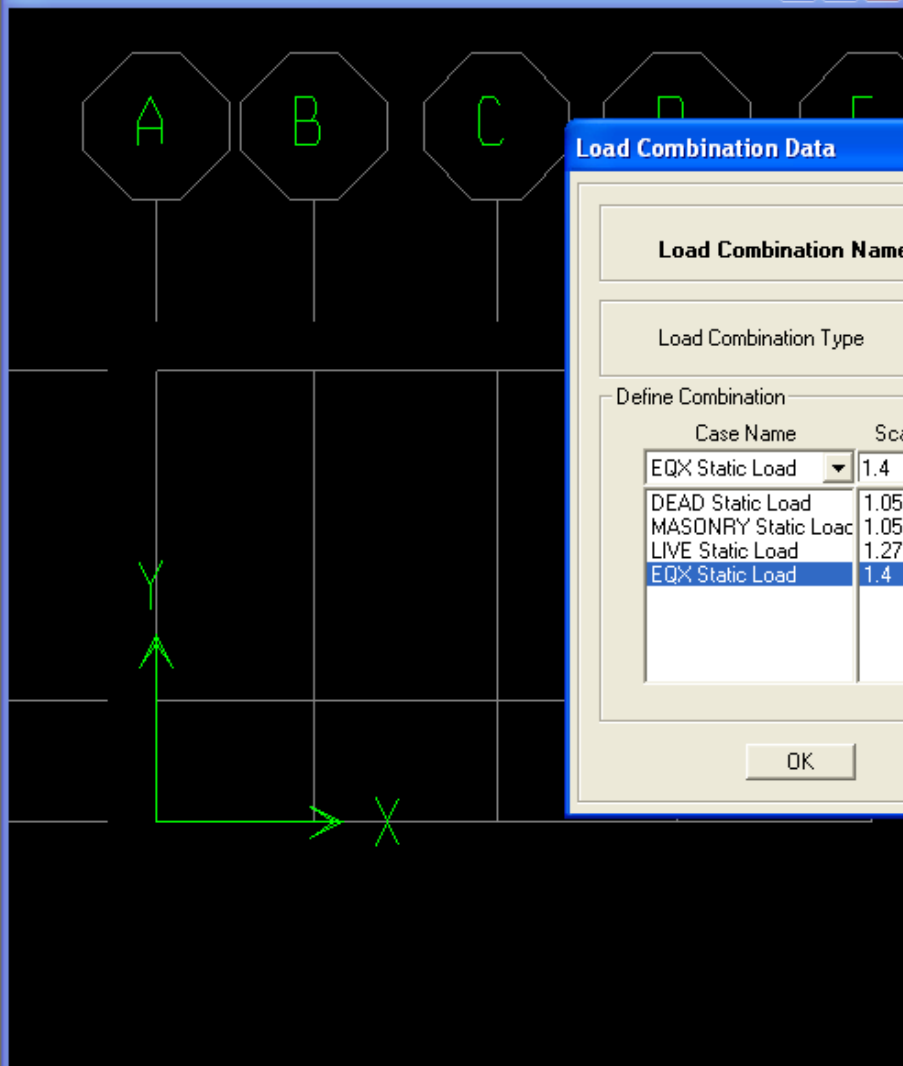
OK

Cancel



Plan View - STORY3 - Elevation 384

3-D View



Load Combination Data

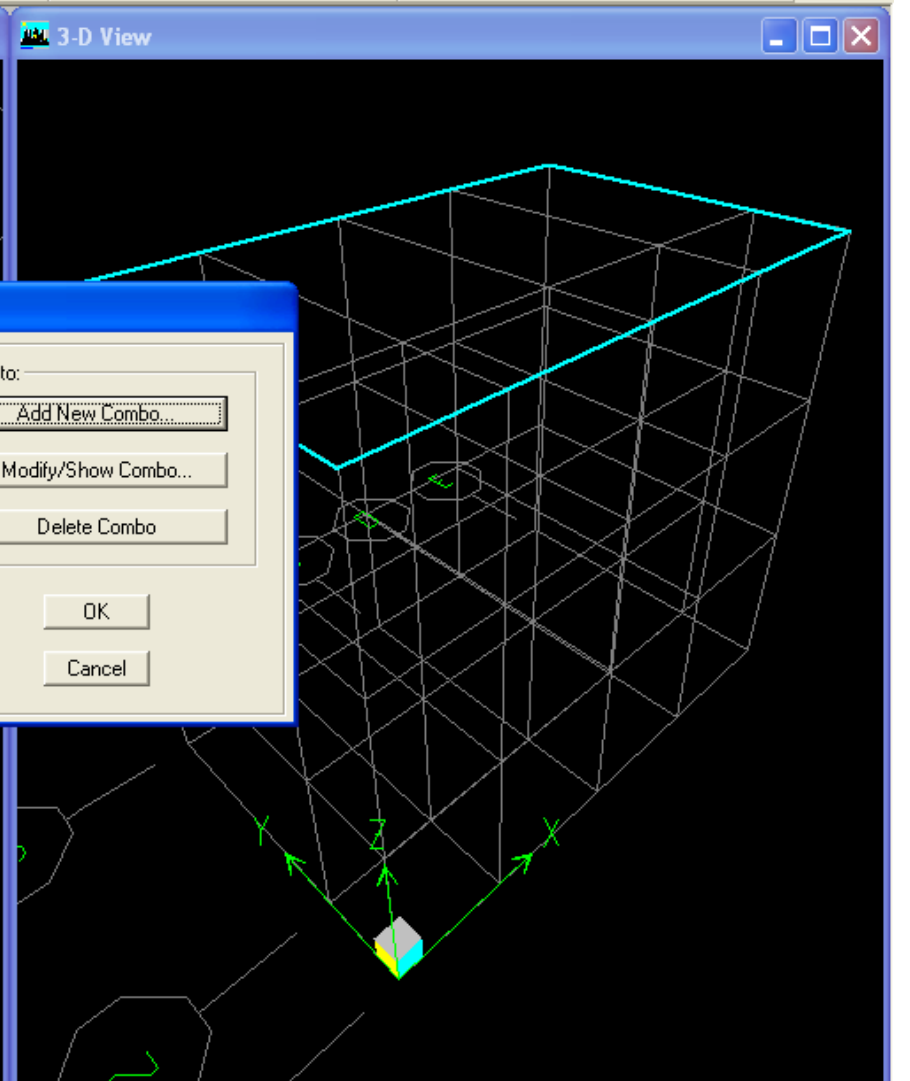
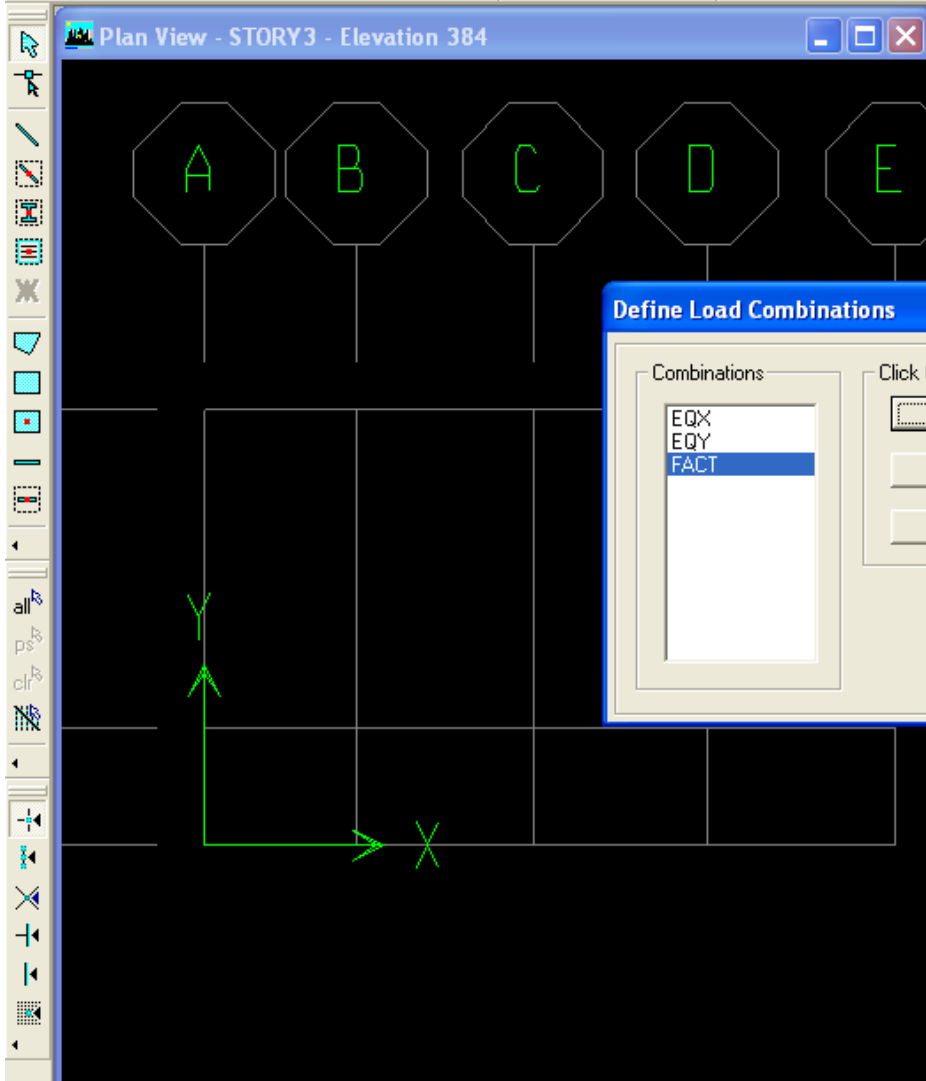
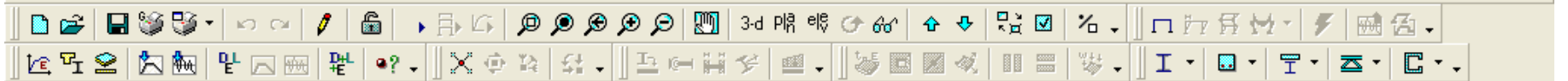
Load Combination Name: EQX

Load Combination Type: ADD

Define Combination

Case Name	Scale Factor
EQX Static Load	1.4
DEAD Static Load	1.05
MASONRY Static Load	1.05
LIVE Static Load	1.275
EQX Static Load	1.4

Buttons: Add, Modify, Delete, OK, Cancel



Define Load Combinations

Combinations:

- EQX
- EQY
- FACT**

Click to:

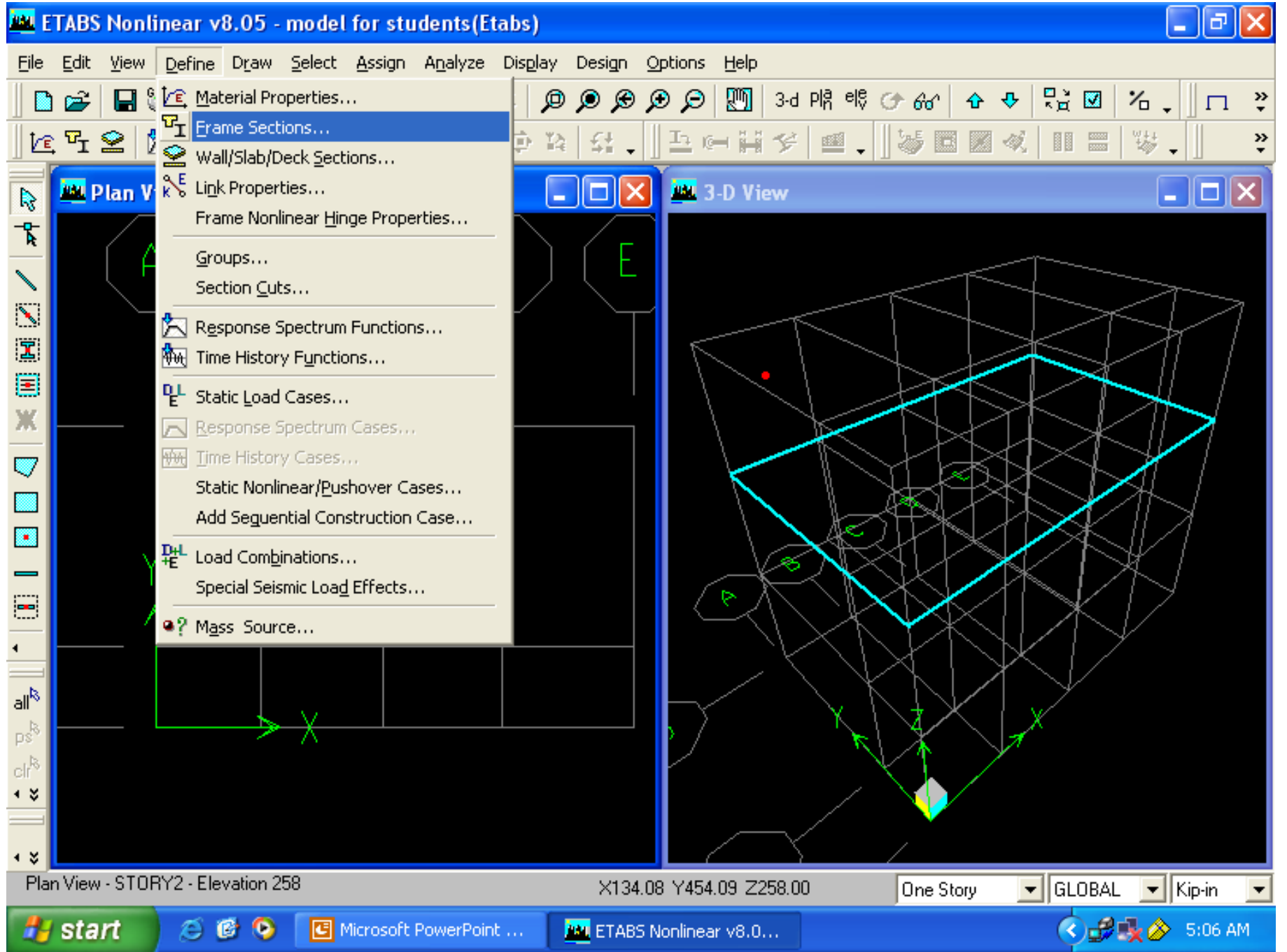
Add New Combo...

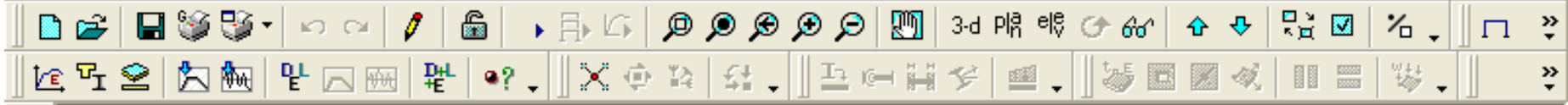
Modify/Show Combo...

Delete Combo

OK

Cancel





Define Frame Properties

Properties

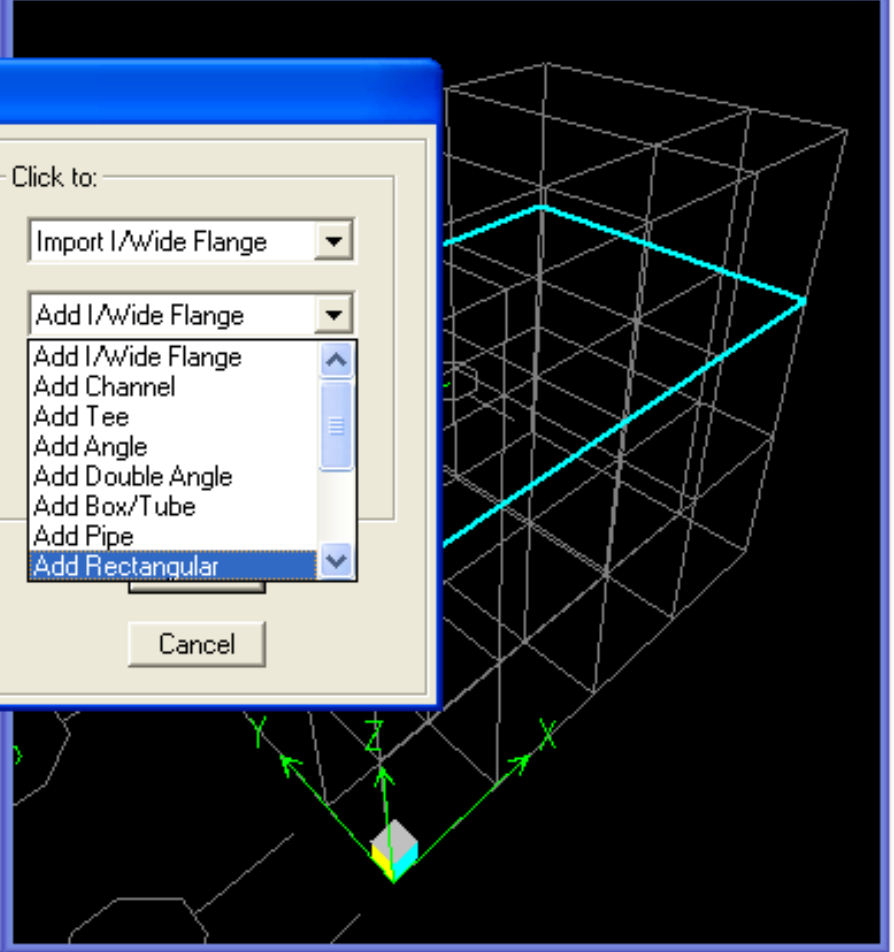
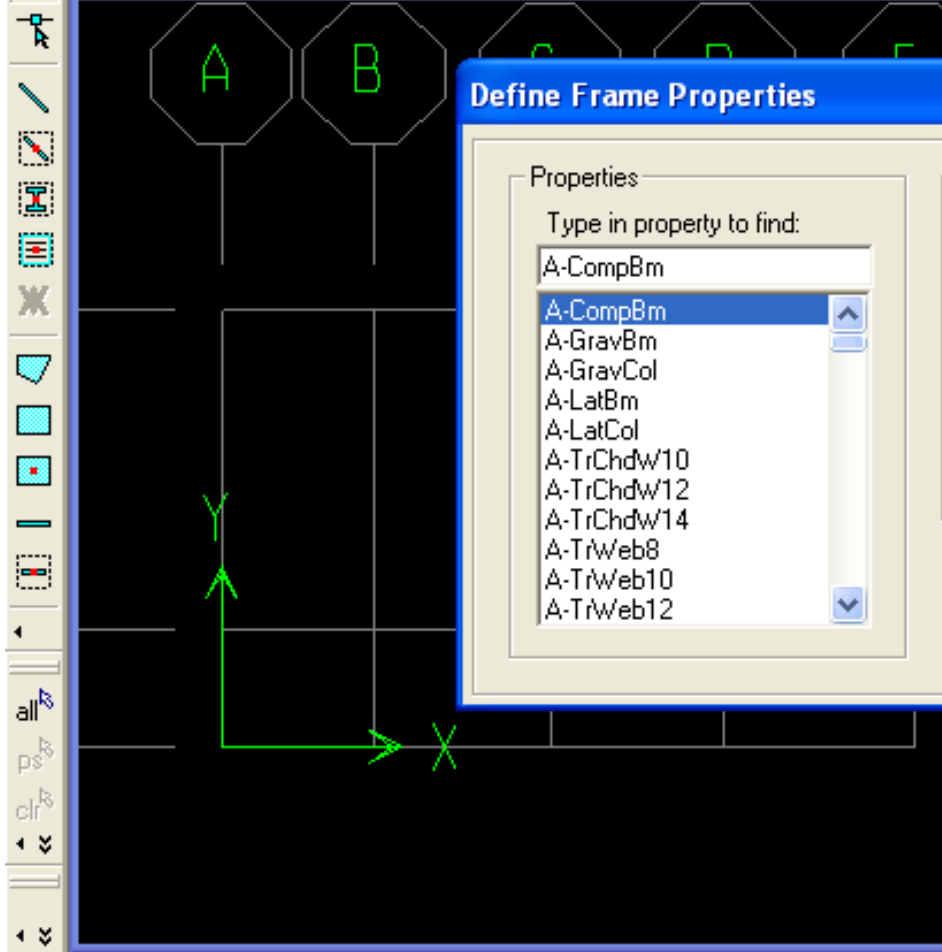
Type in property to find:

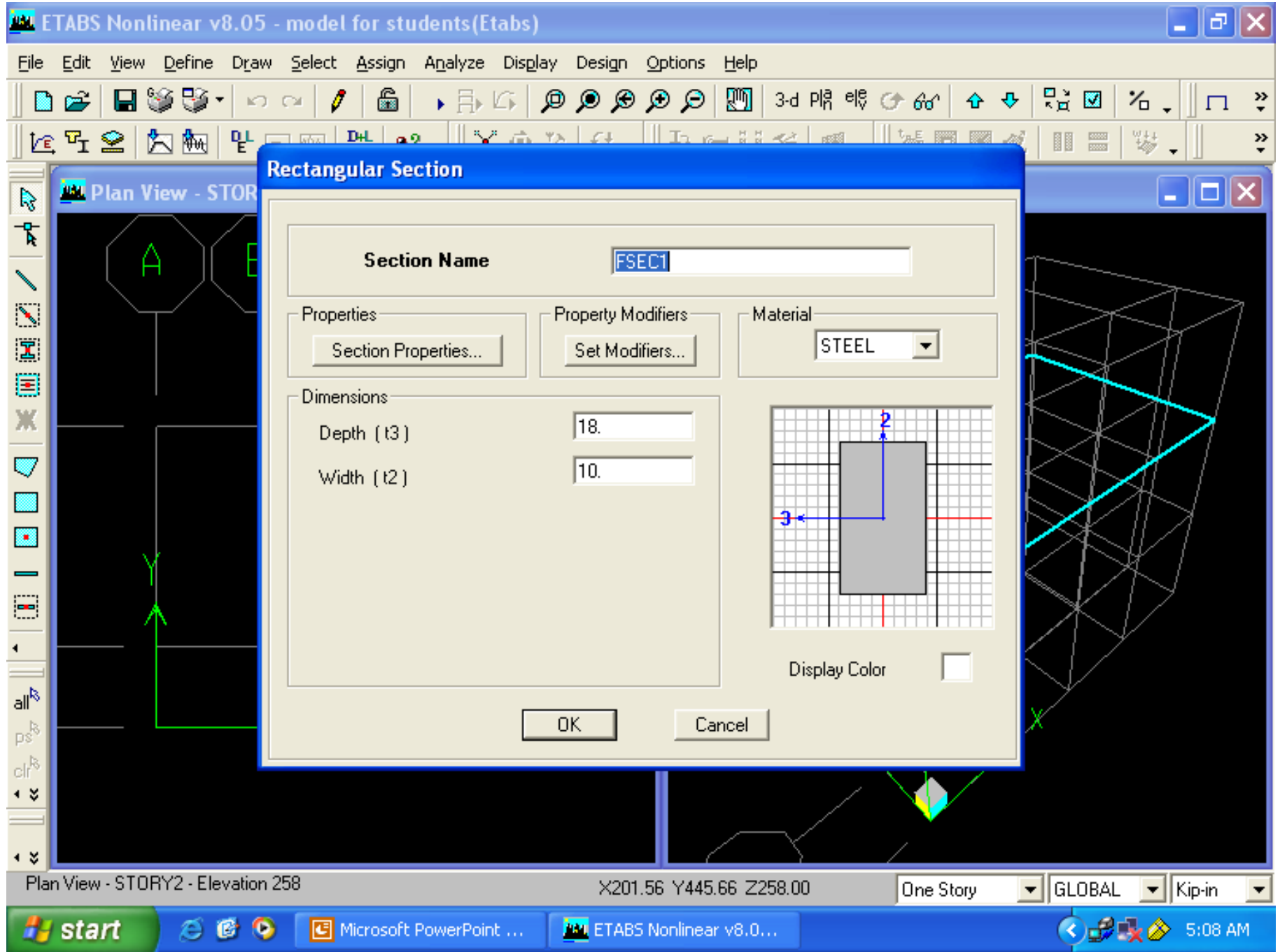
- A-CompBm
- A-CompBm**
- A-GravBm
- A-GravCol
- A-LatBm
- A-LatCol
- A-TrChdw10
- A-TrChdw12
- A-TrChdw14
- A-TrWeb8
- A-TrWeb10
- A-TrWeb12

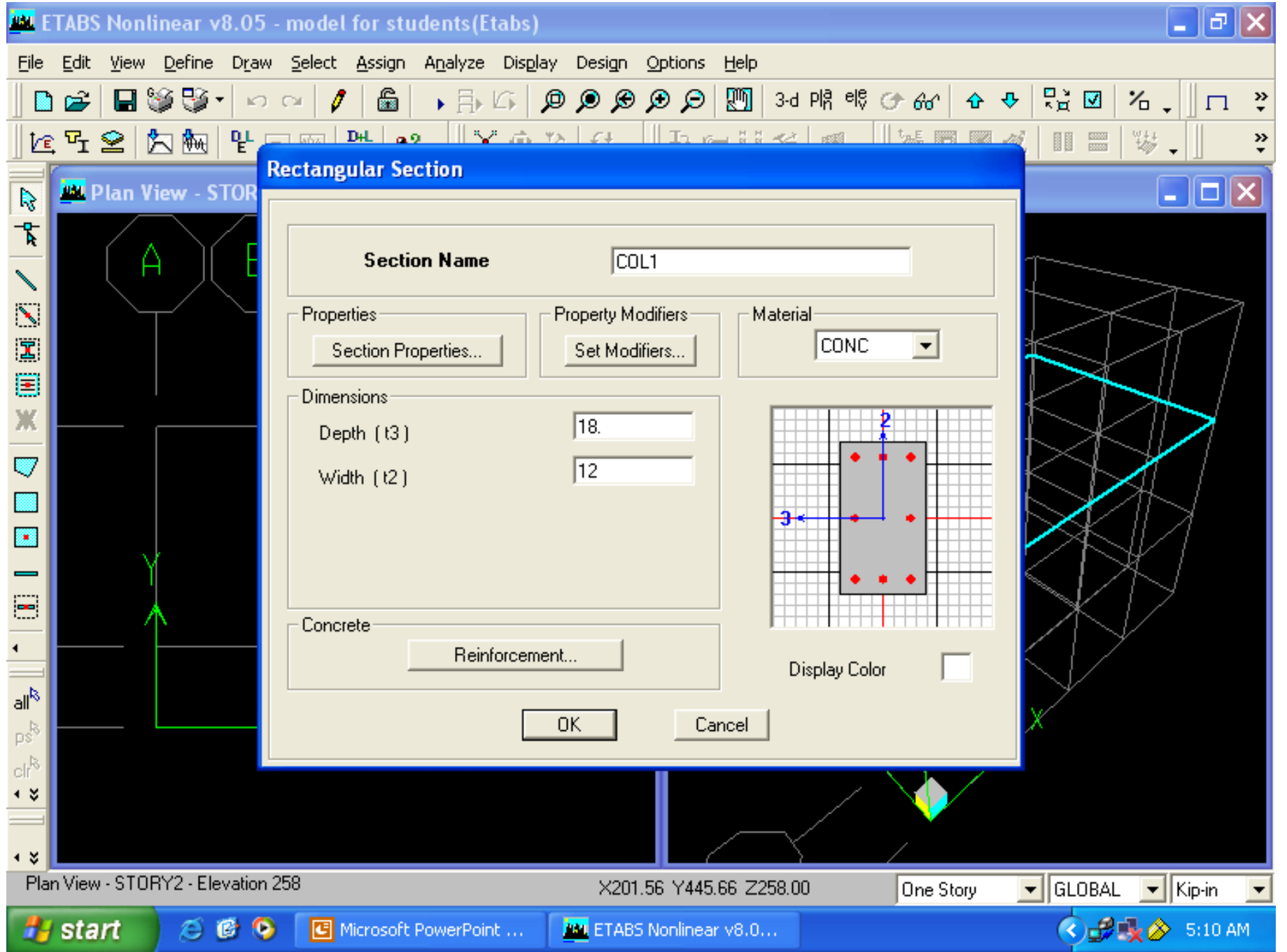
Click to:

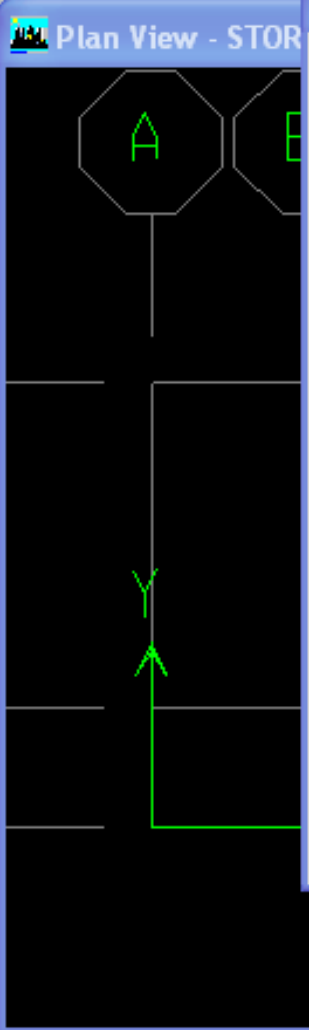
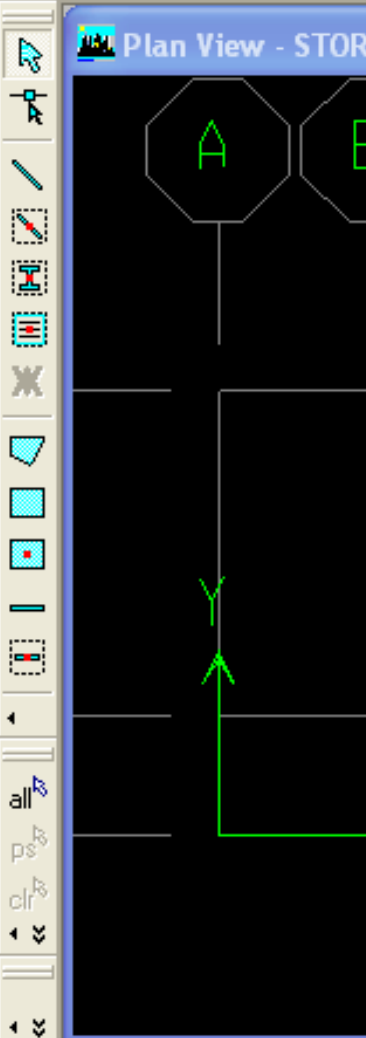
- Import I/wide Flange
- Add I/wide Flange
- Add I/wide Flange
- Add Channel
- Add Tee
- Add Angle
- Add Double Angle
- Add Box/Tube
- Add Pipe
- Add Rectangular**

Cancel









Reinforcement Data

Design Type

Column Beam

Configuration of Reinforcement

Rectangular Circular

Lateral Reinforcement

Ties Spiral

Rectangular Reinforcement

Cover to Rebar Center:

Number of Bars in 3-dir:

Number of Bars in 2-dir:

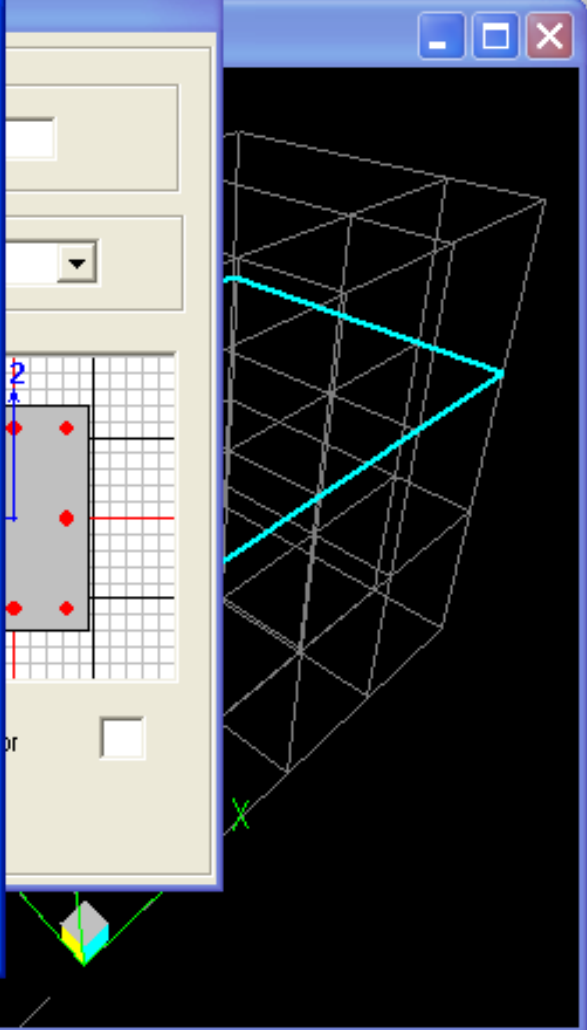
Bar Size:

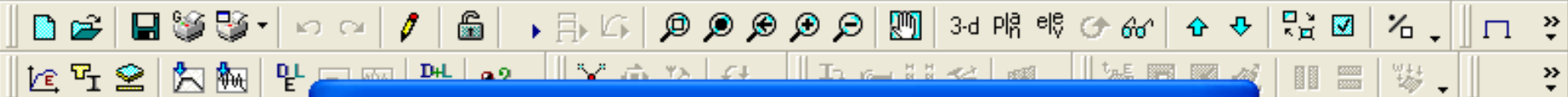
Check/Design

Reinforcement to be Checked

Reinforcement to be Designed

OK Cancel





Rectangular Section

Section Name COL1

Properties:

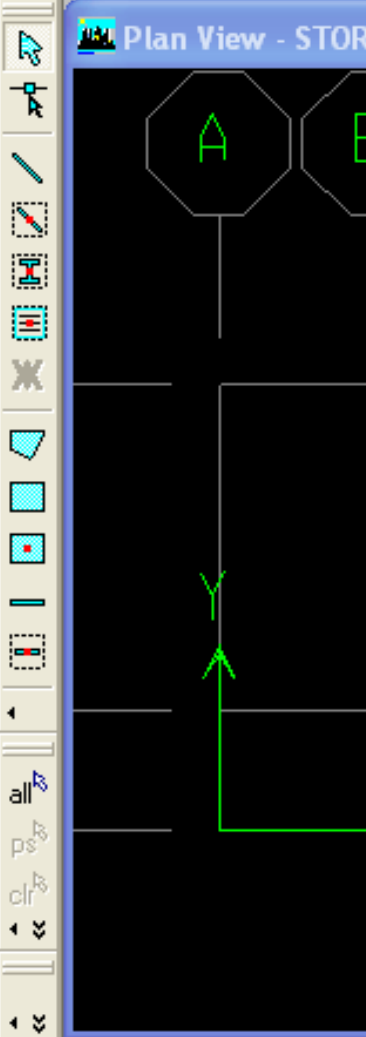
Property Modifiers:

Material: CONC

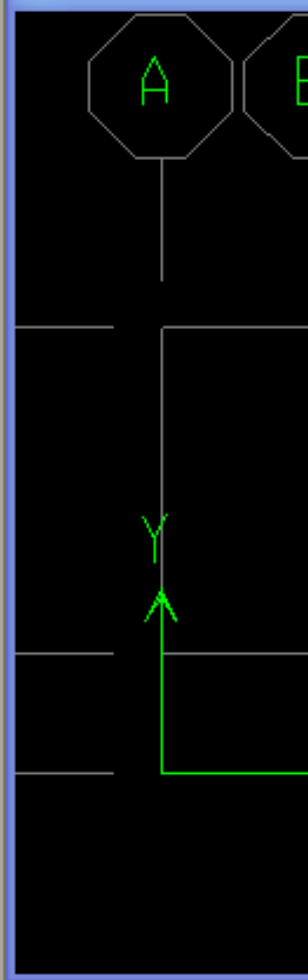
Dimensions:
 Depth (t3) 18.
 Width (t2) 12

Concrete:

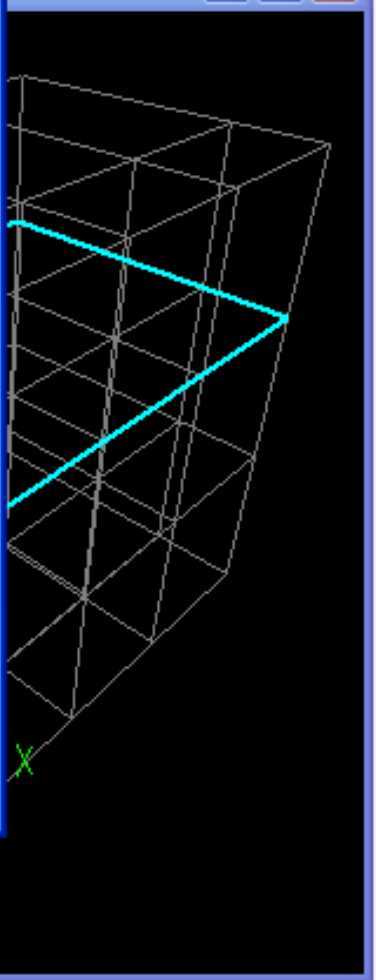
Display Color



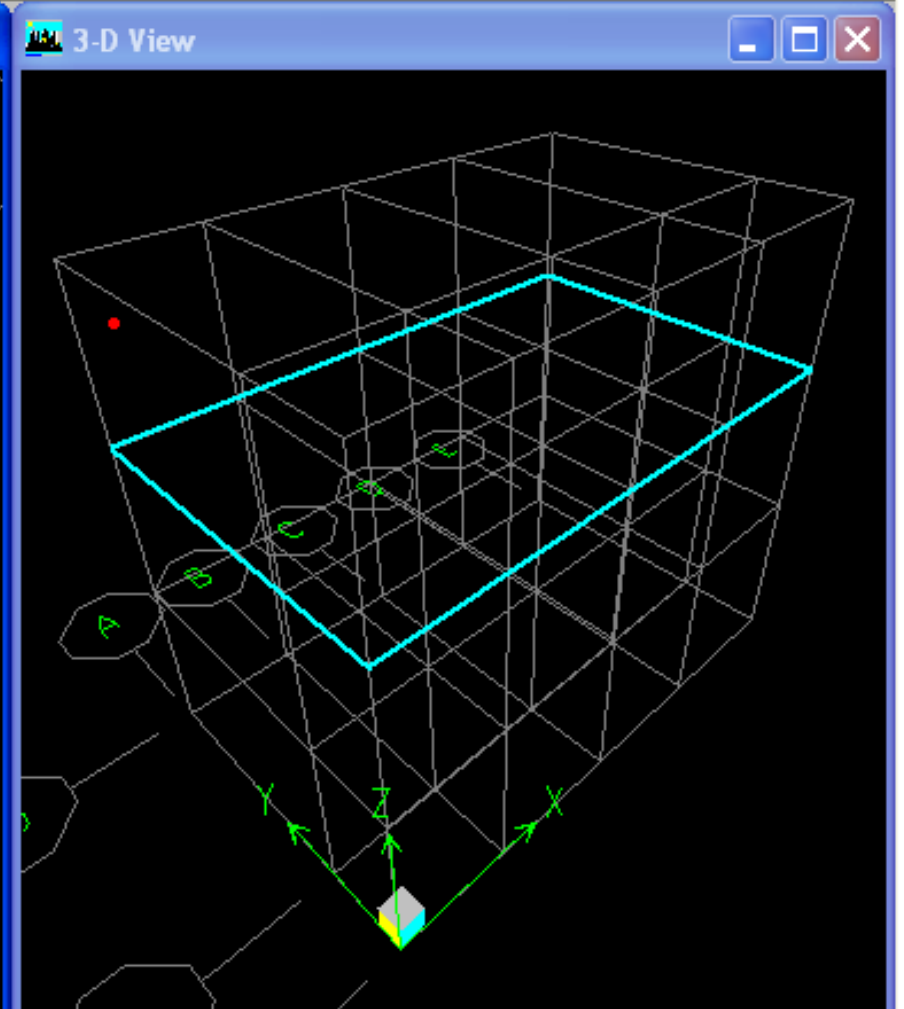
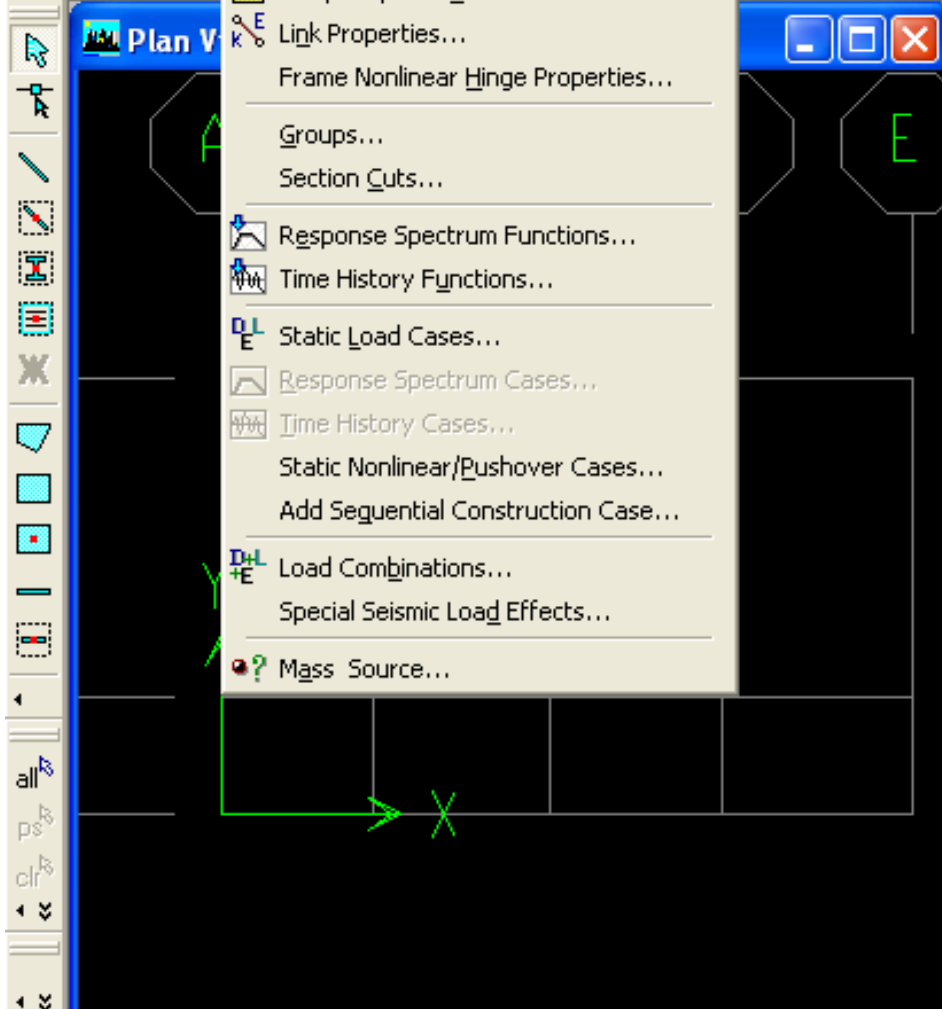
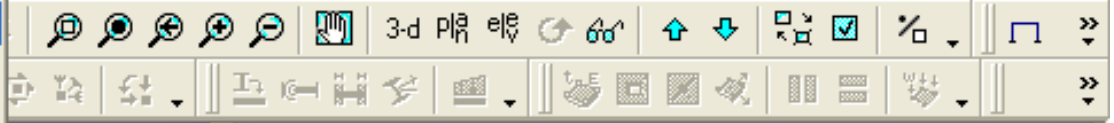
Plan View - STOR

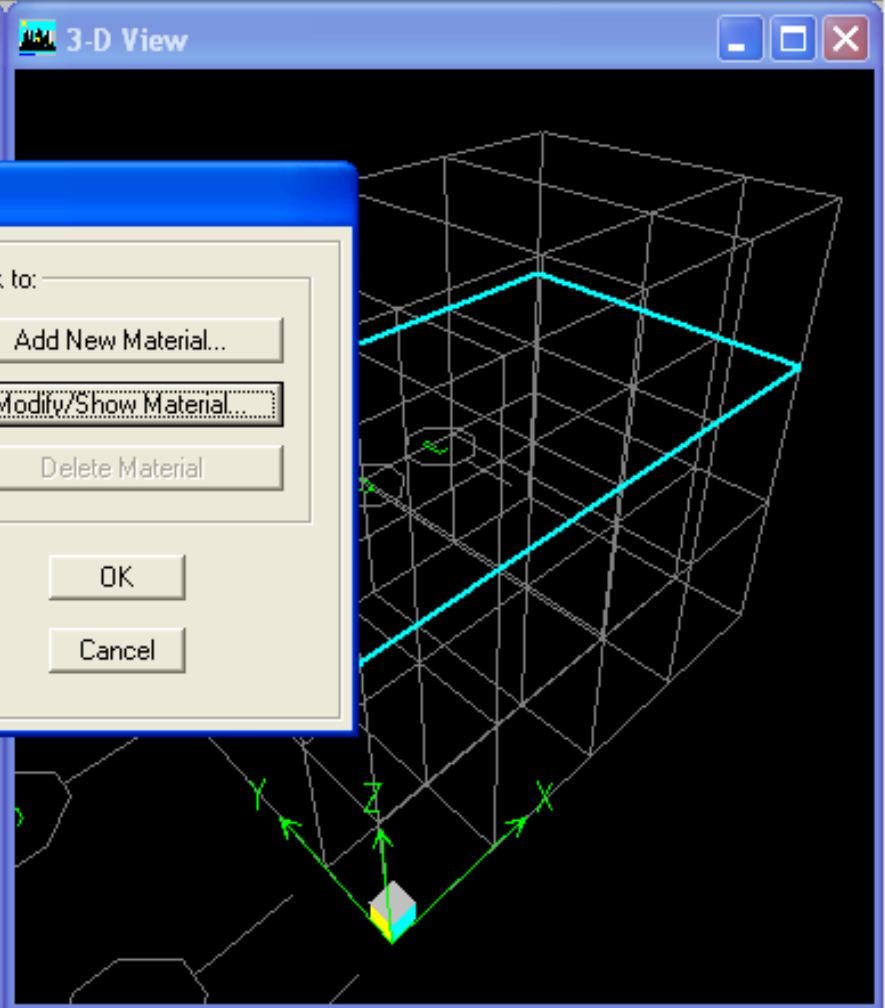
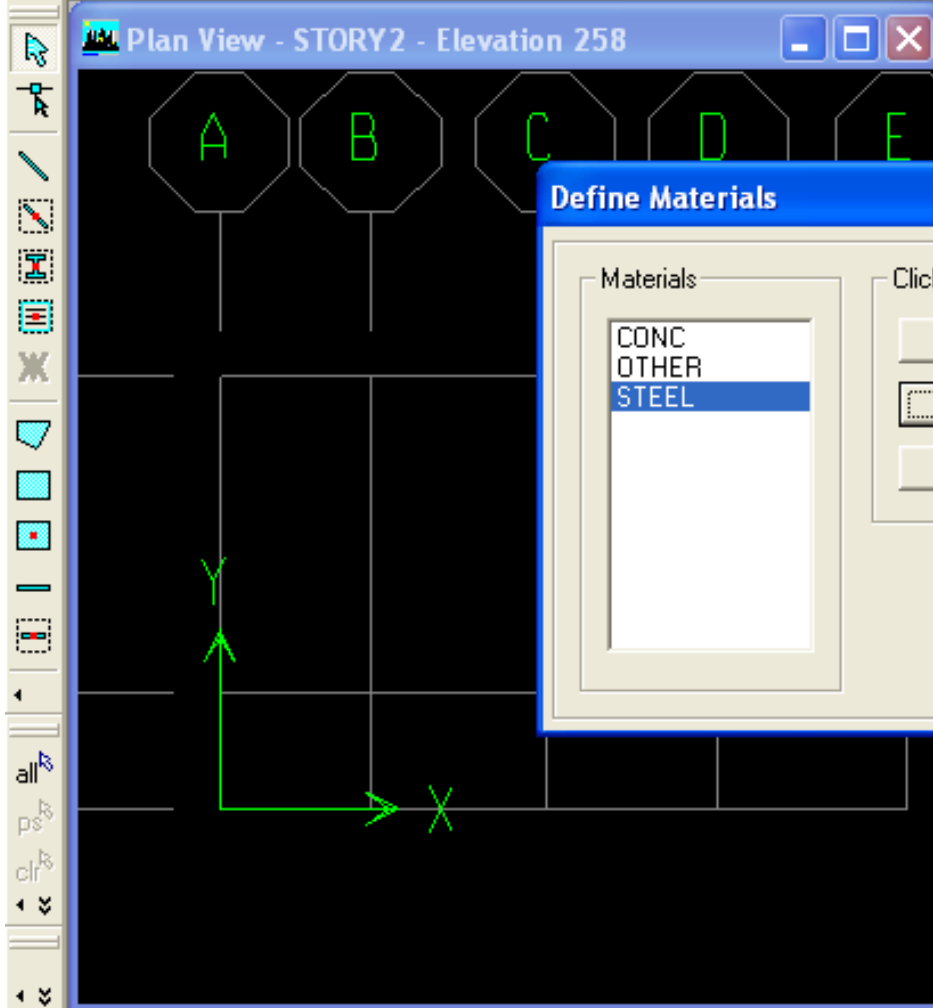
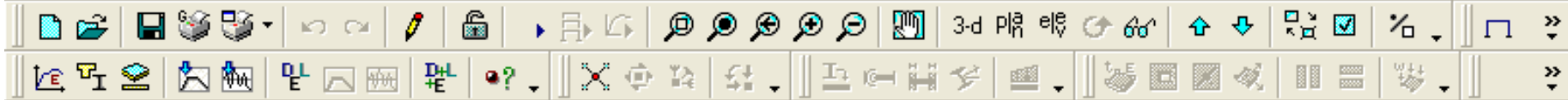


Plan View - STOR



- Material Properties...
- Frame Sections...
- Wall/Slab/Deck Sections...
- Link Properties...
- Frame Nonlinear Hinge Properties...
- Groups...
- Section Cuts...
- Response Spectrum Functions...
- Time History Functions...
- Static Load Cases...
- Response Spectrum Cases...
- Time History Cases...
- Static Nonlinear/Pushover Cases...
- Add Sequential Construction Case...
- Load Combinations...
- Special Seismic Load Effects...
- Mass Source...





Define Materials

Materials

- CONC
- OTHER
- STEEL**

Click to:

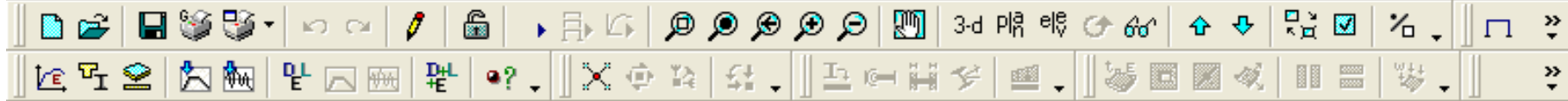
Add New Material...

Modify/Show Material...

Delete Material

OK

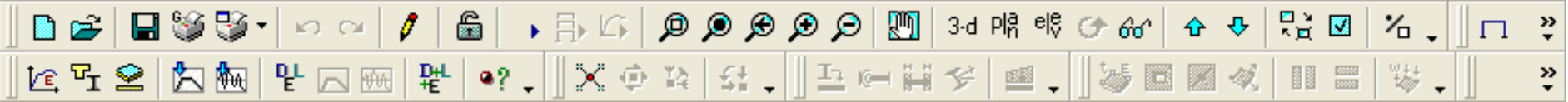
Cancel



Material Property Data

Material Name	STEEL	Display Color	
Type of Material	<input checked="" type="radio"/> Isotropic <input type="radio"/> Orthotropic	Type of Design	Steel
Analysis Property Data		Design Property Data	
Mass per unit Volume	7.324E-07	Minimum Yield Stress, Fy	40
Weight per unit Volume	2.830E-04	Minimum Tensile Stress, Fu	65.
Modulus of Elasticity	29000	Cost per Unit Weight	1.
Poisson's Ratio	0.3		
Coeff of Thermal Expansion	6.500E-06		
Shear Modulus	11154		

OK Cancel



Plan View - STORY2 - Elevation 258

3-D View

Define Wall/Slab/Deck Sections

Sections

- DECK1
- PLANK1
- SLAB1**
- WALL1

Click to:

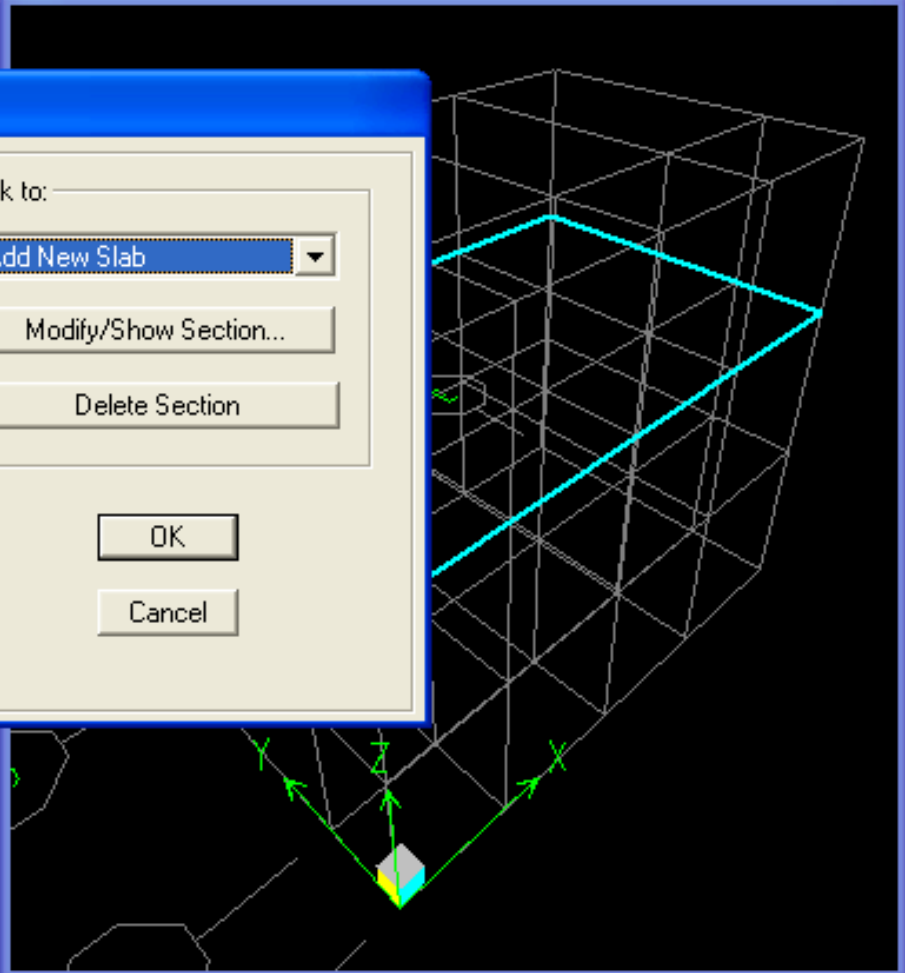
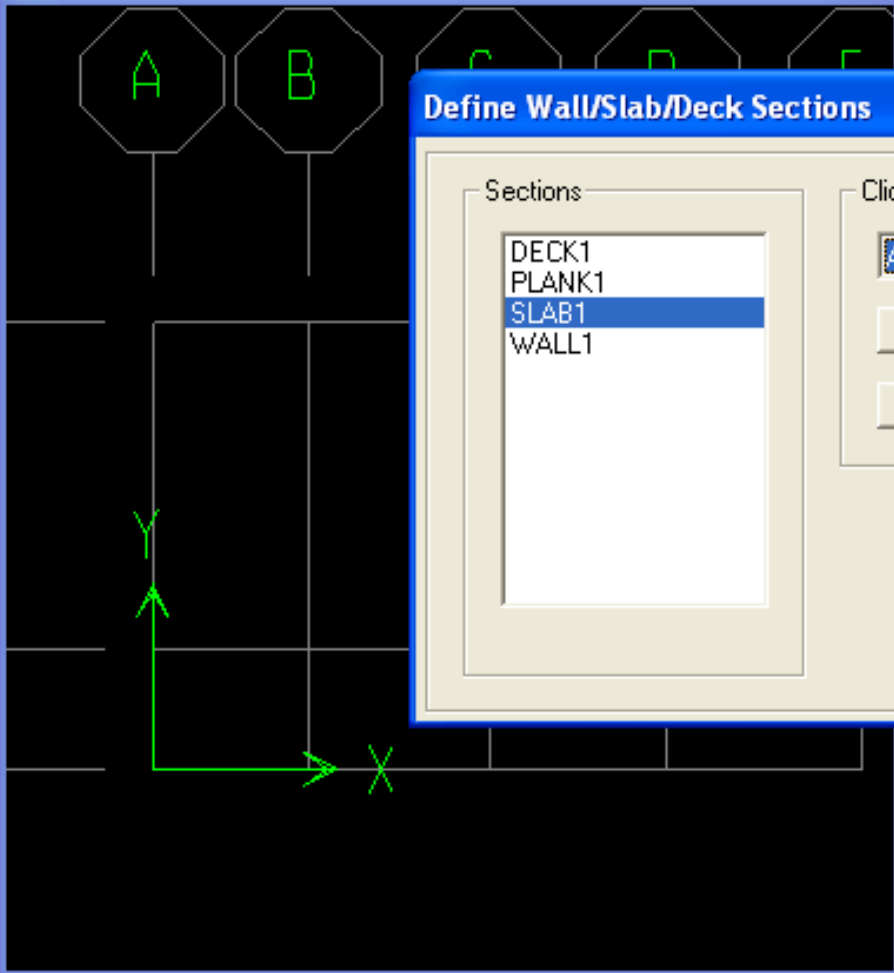
Add New Slab

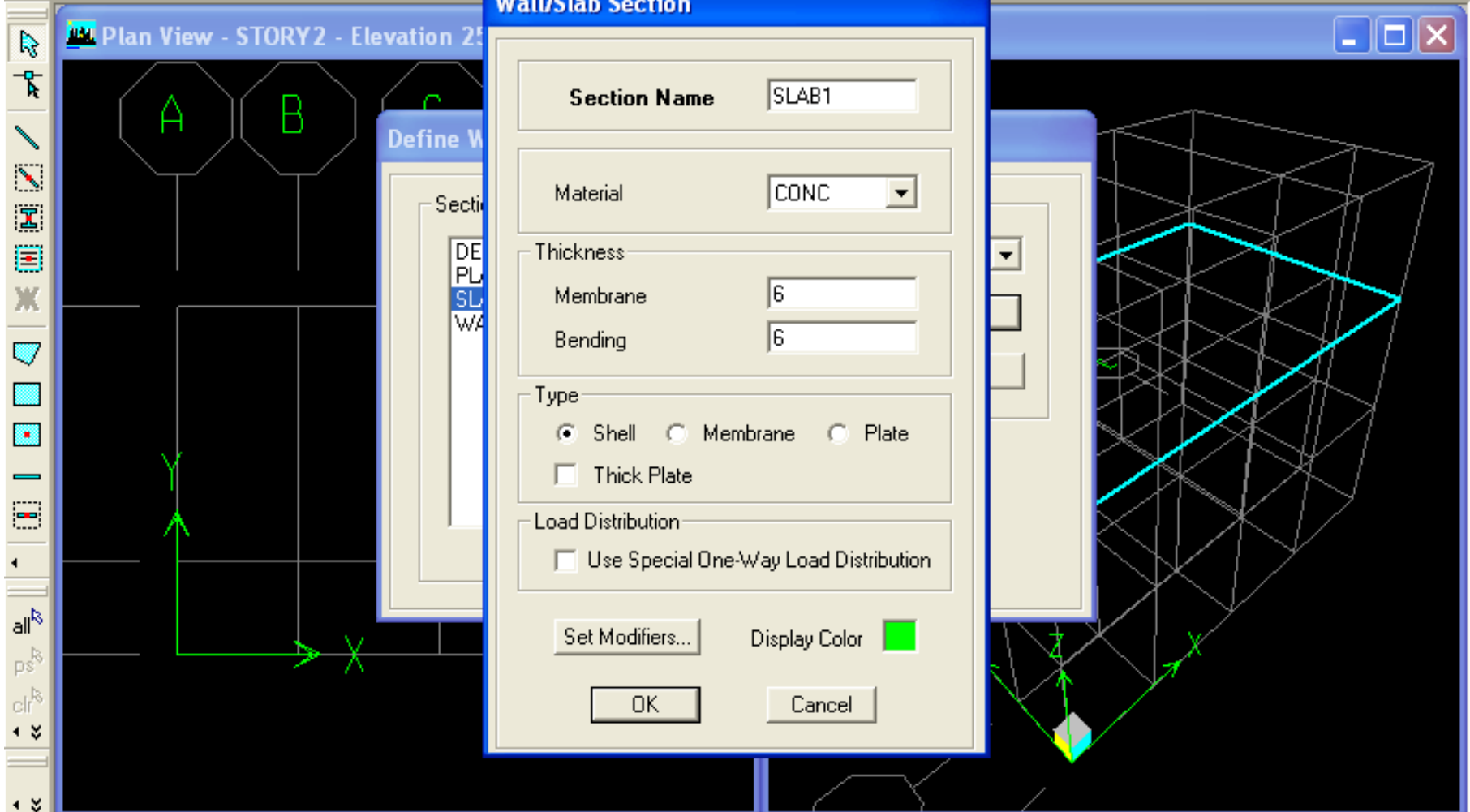
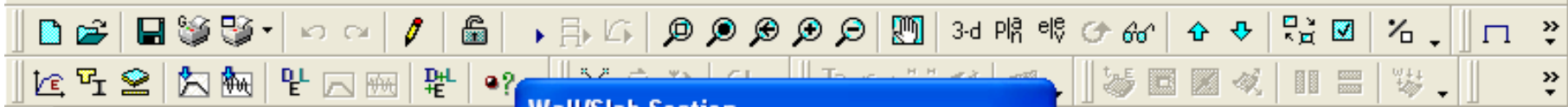
Modify/Show Section...

Delete Section

OK

Cancel





Wall/Slab Section

Section Name SLAB1

Material CONC

Thickness

Membrane 6

Bending 6

Type

Shell Membrane Plate

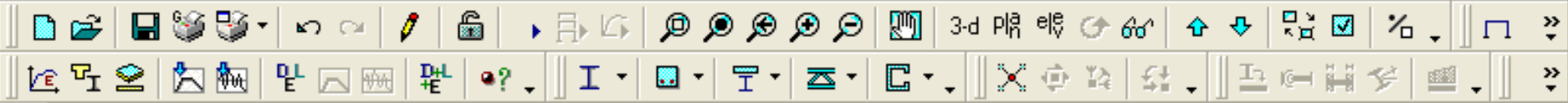
Thick Plate

Load Distribution

Use Special One-Way Load Distribution

Set Modifiers... Display Color ■

OK Cancel

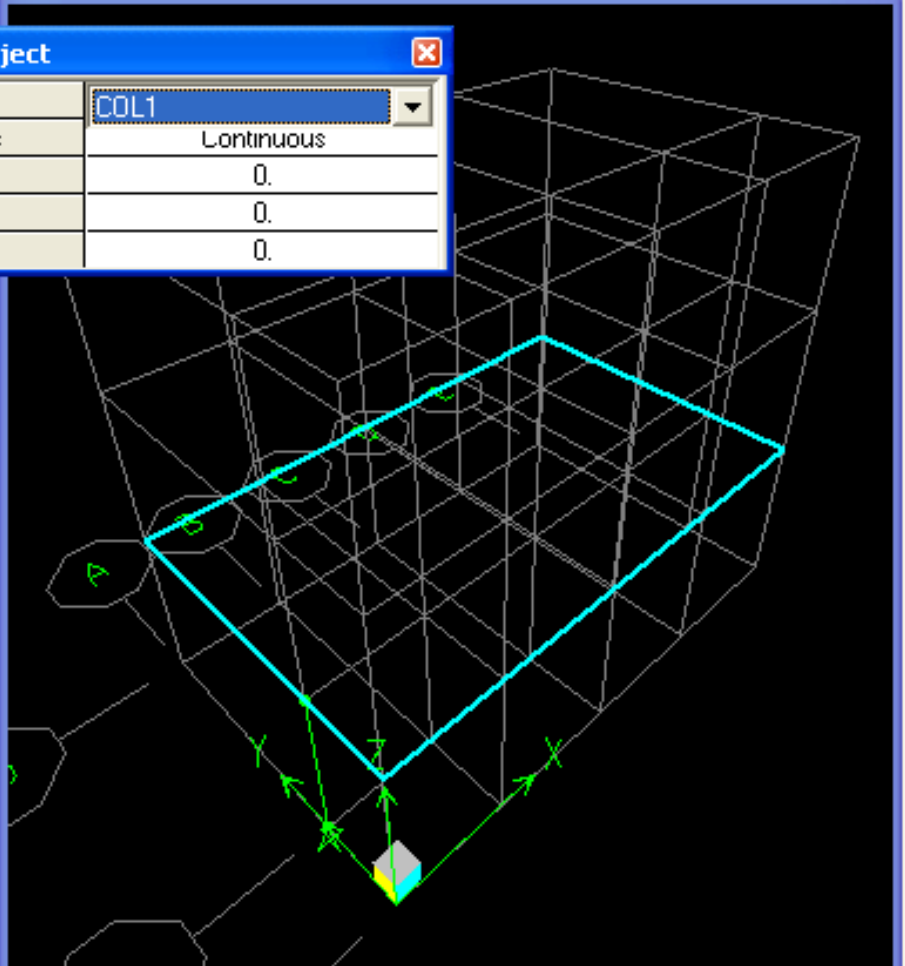
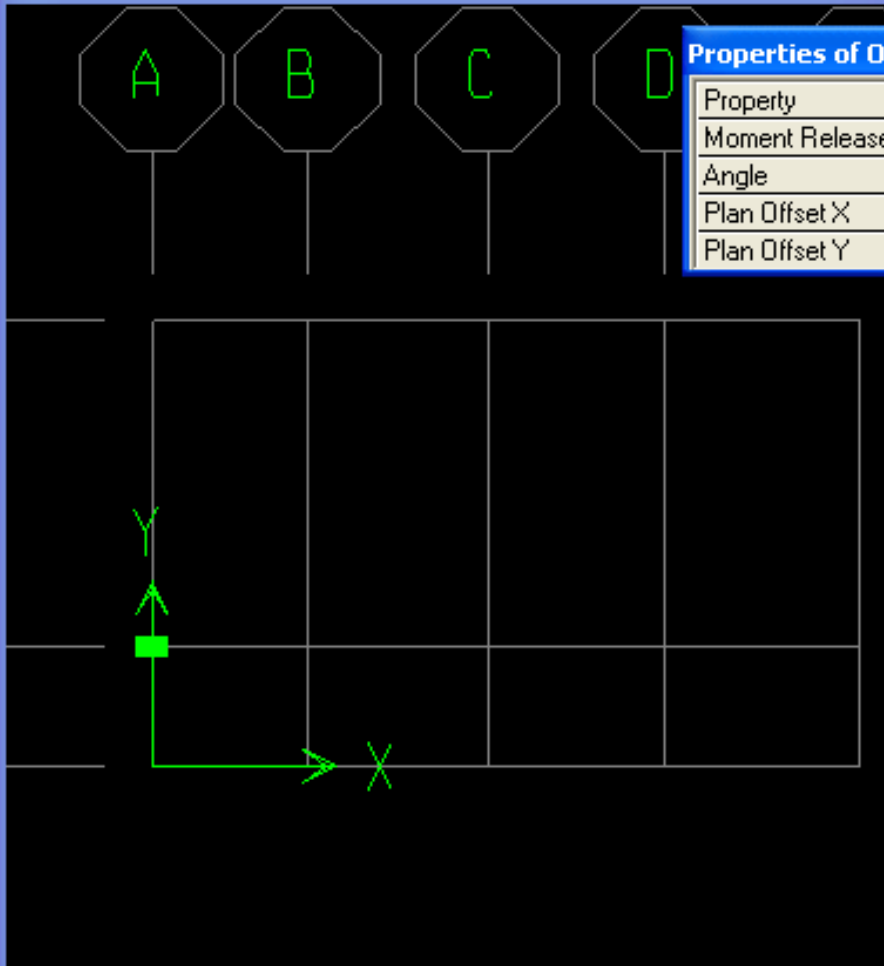


Plan View - STORY1 - Elevation 132 Line D...

3-D View Line Draw Mode

Properties of Object

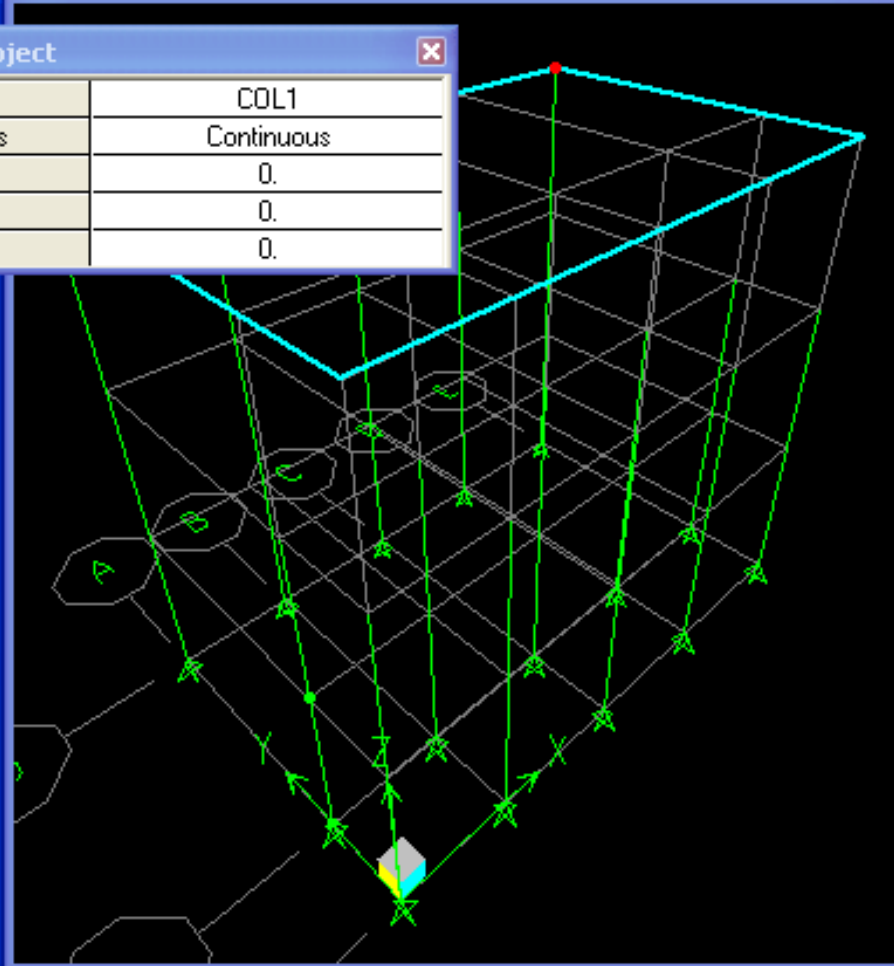
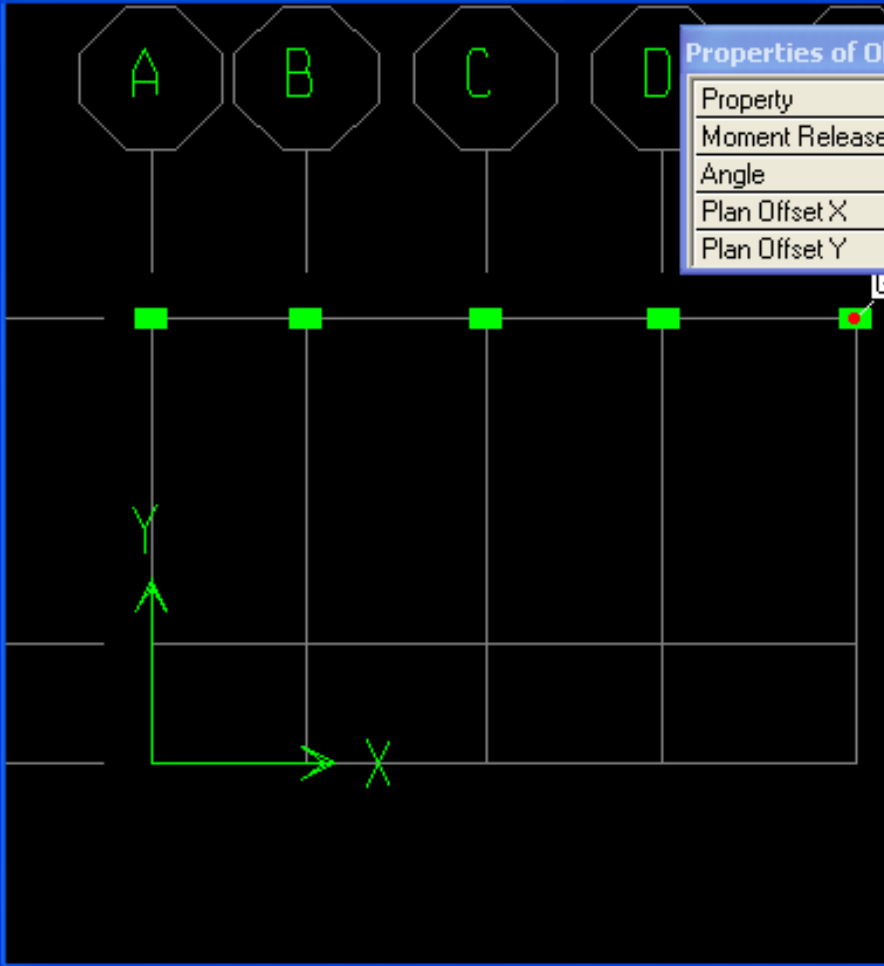
Property	COL1
Moment Releases	Continuous
Angle	0.
Plan Offset X	0.
Plan Offset Y	0.





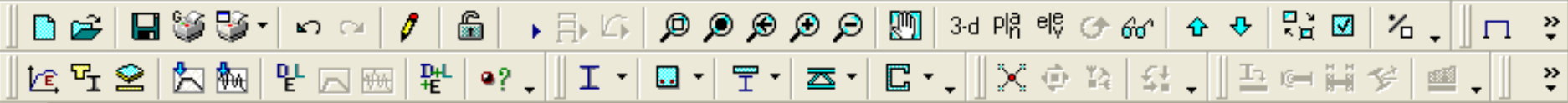
Plan View - STORY3 - Elevation 384 Line D...

3-D View Line Draw Mode



Properties of Object

Property	COL1
Moment Releases	Continuous
Angle	0.
Plan Offset X	0.
Plan Offset Y	0.

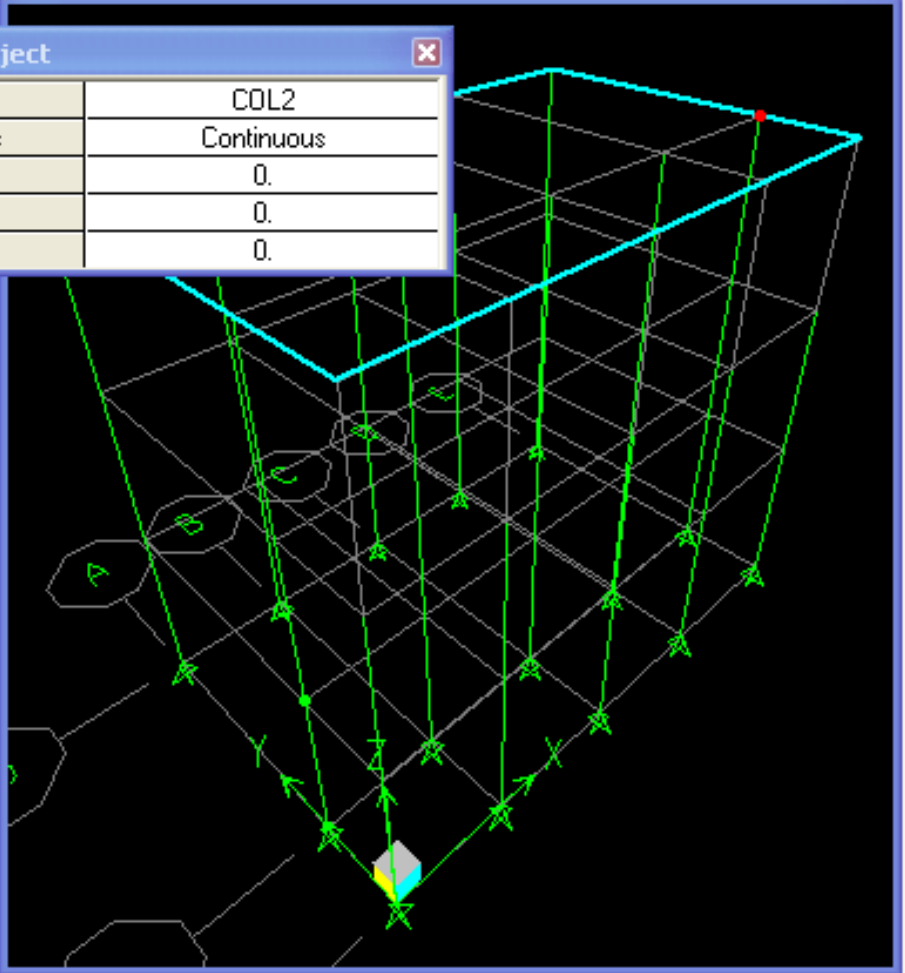
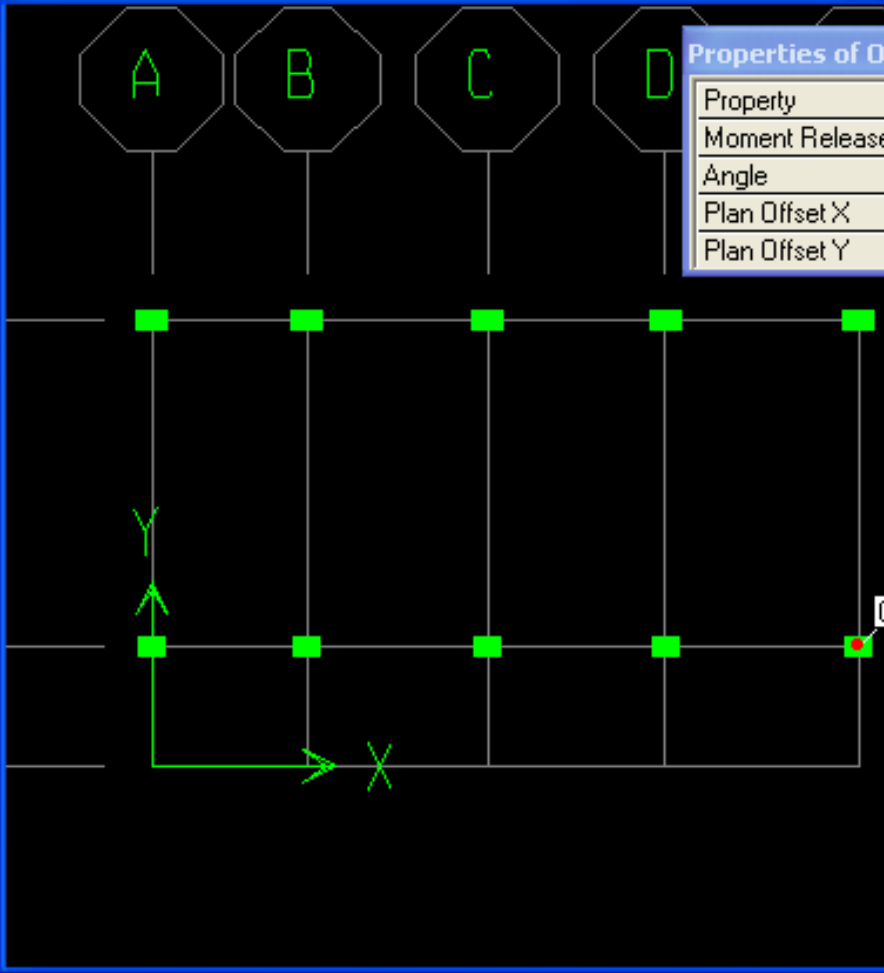


Plan View - STORY3 - Elevation 384 Line D...

3-D View Line Draw Mode

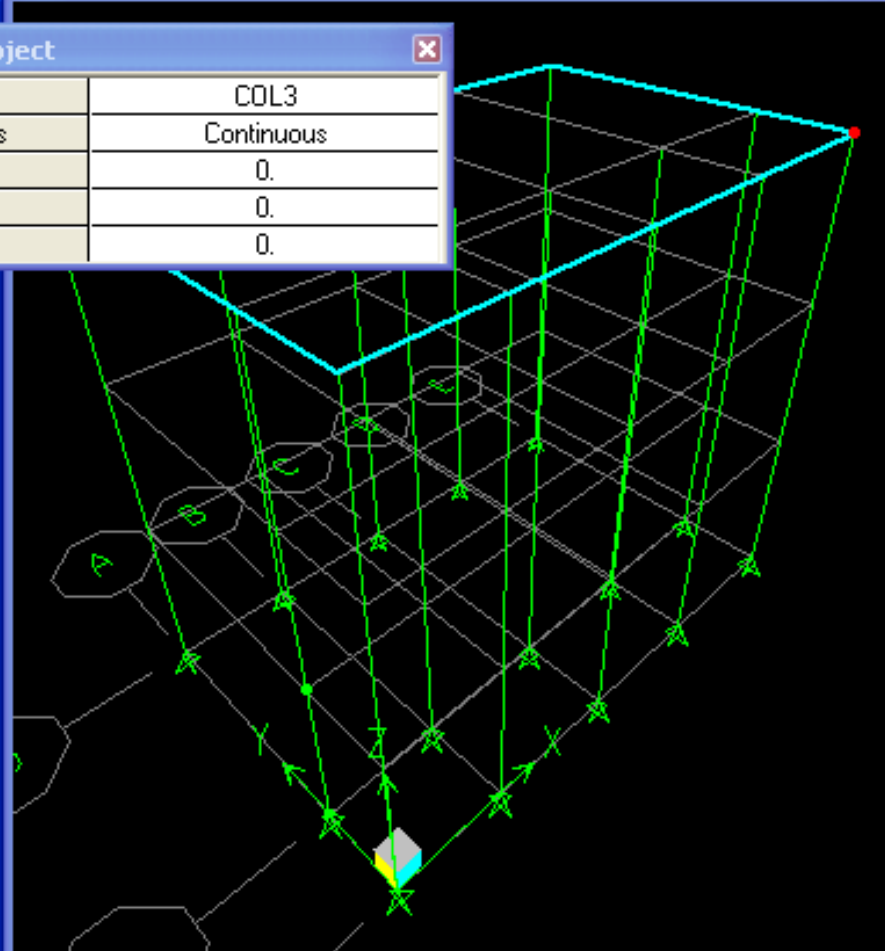
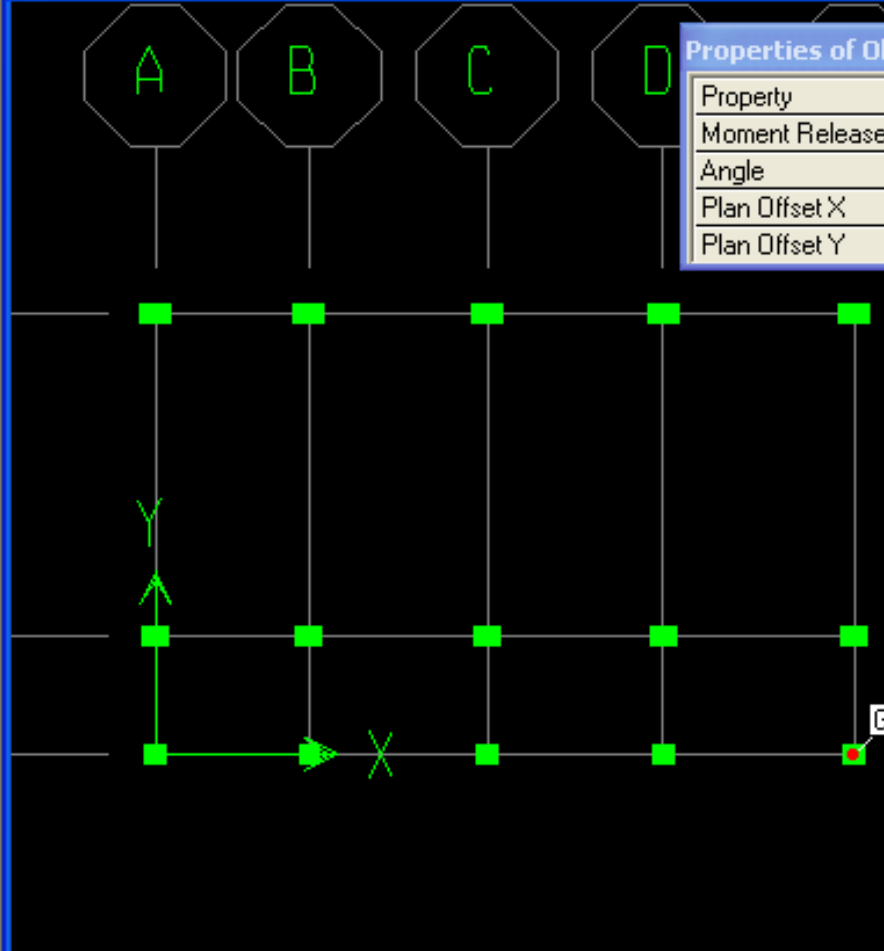
Properties of Object

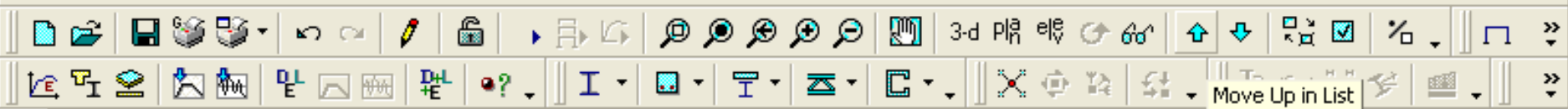
Property	COL2
Moment Releases	Continuous
Angle	0.
Plan Offset X	0.
Plan Offset Y	0.



Properties of Object

Property	COL3
Moment Releases	Continuous
Angle	0.
Plan Offset X	0.
Plan Offset Y	0.

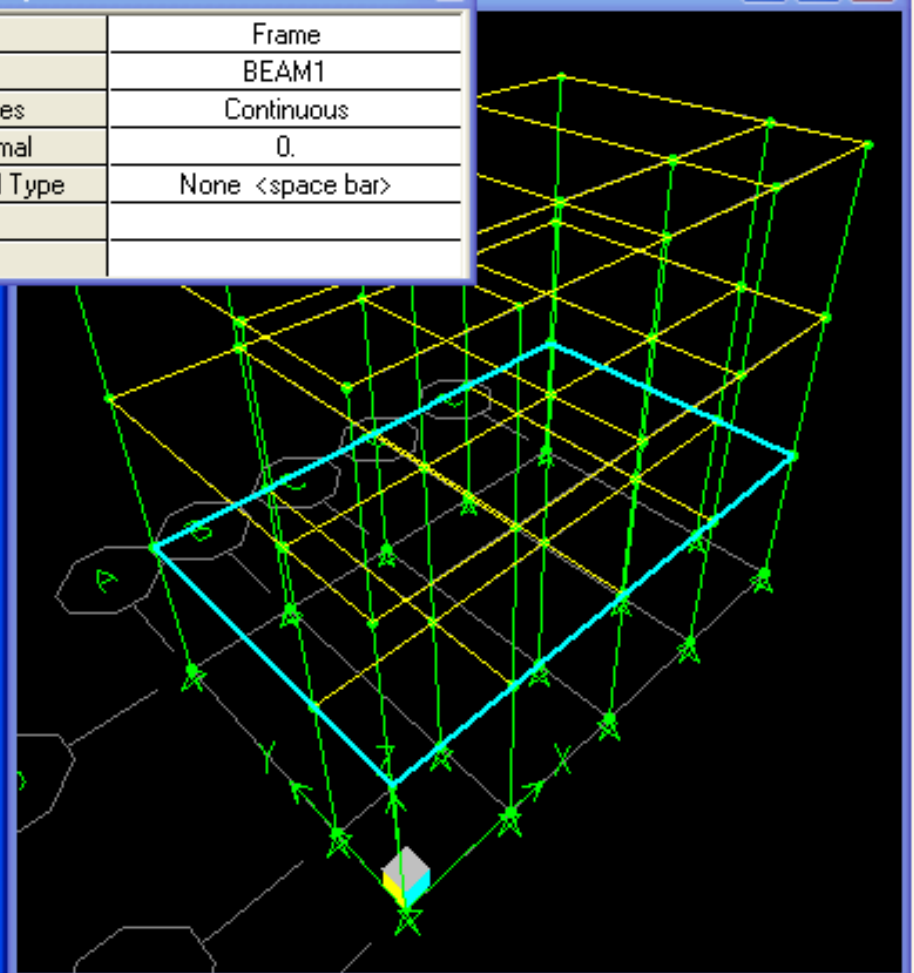
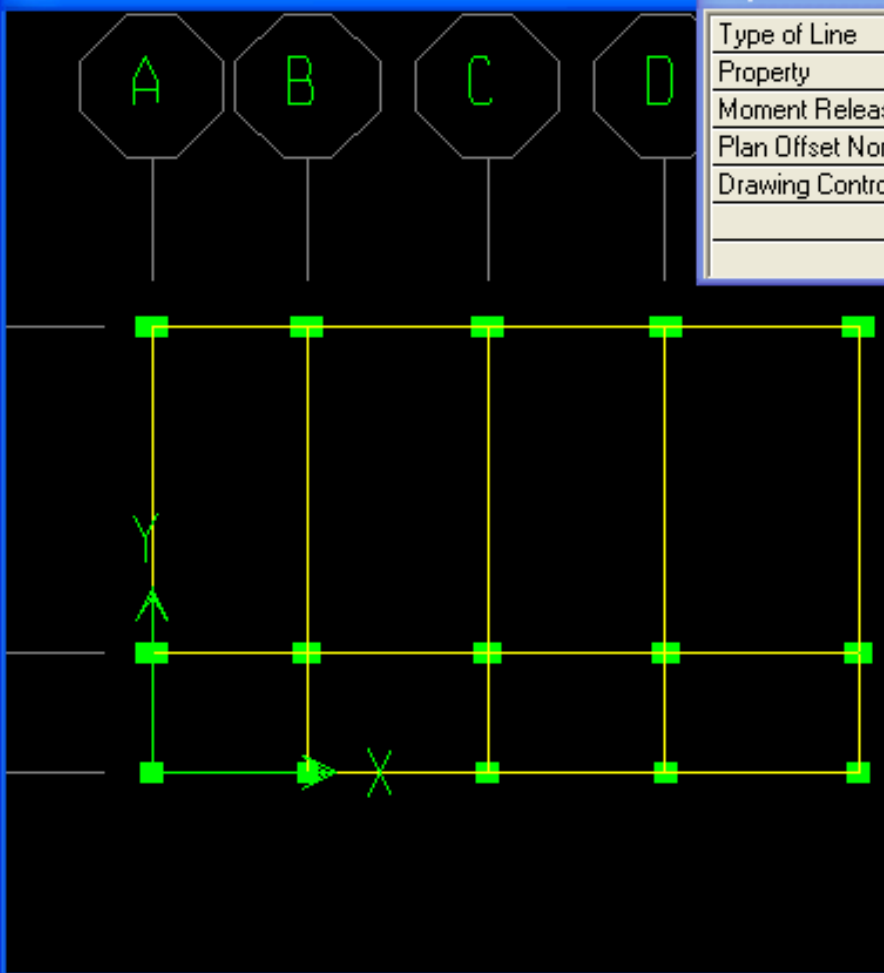




Plan View - STORY1 - Elevation 132 Line D.

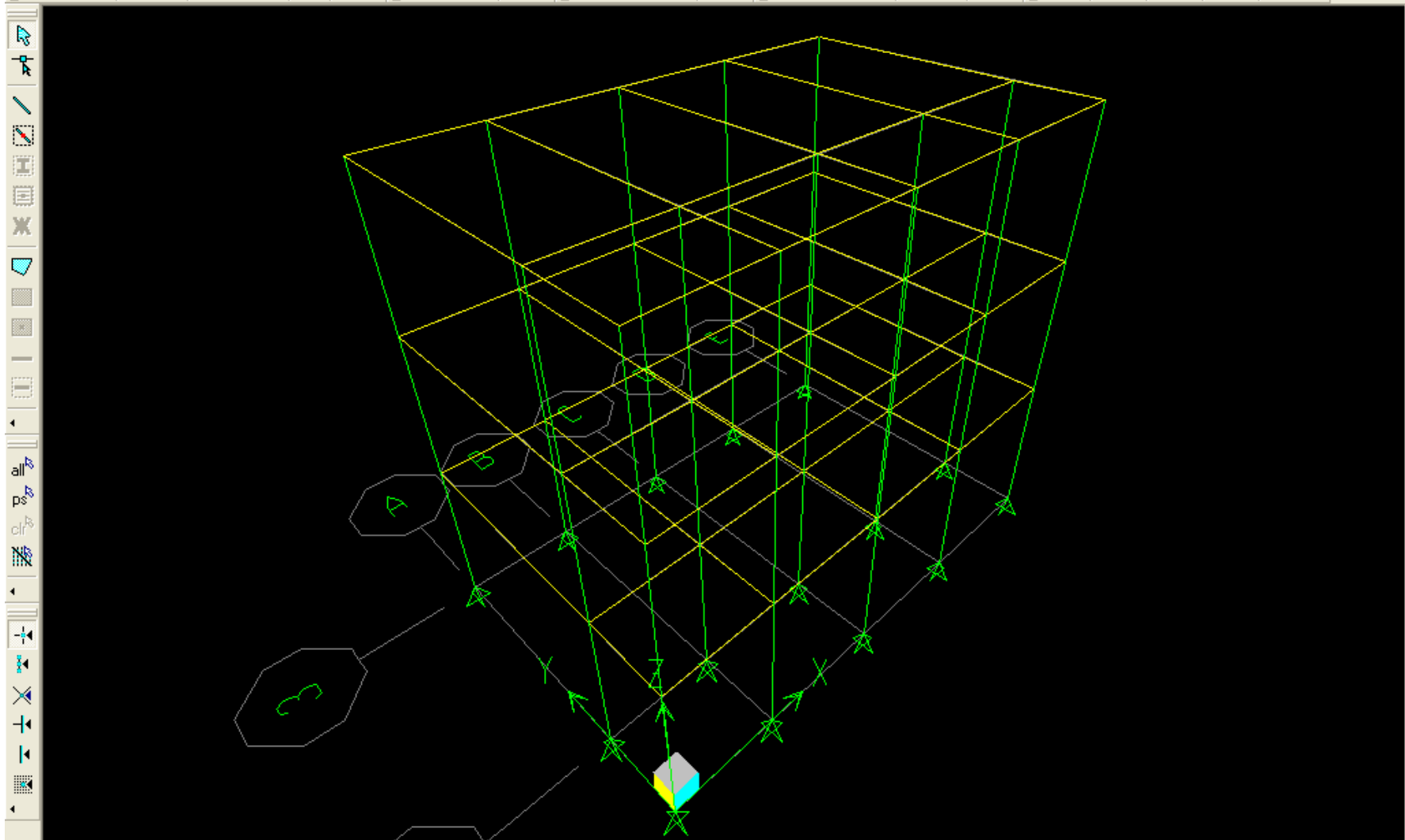
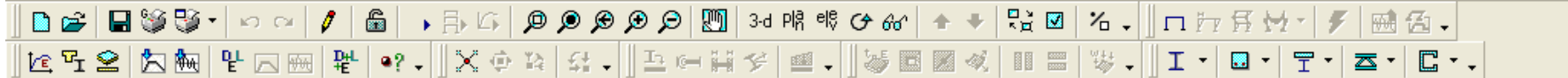
Properties of Object

Type of Line	Frame
Property	BEAM1
Moment Releases	Continuous
Plan Offset Normal	0.
Drawing Control Type	None <space bar>



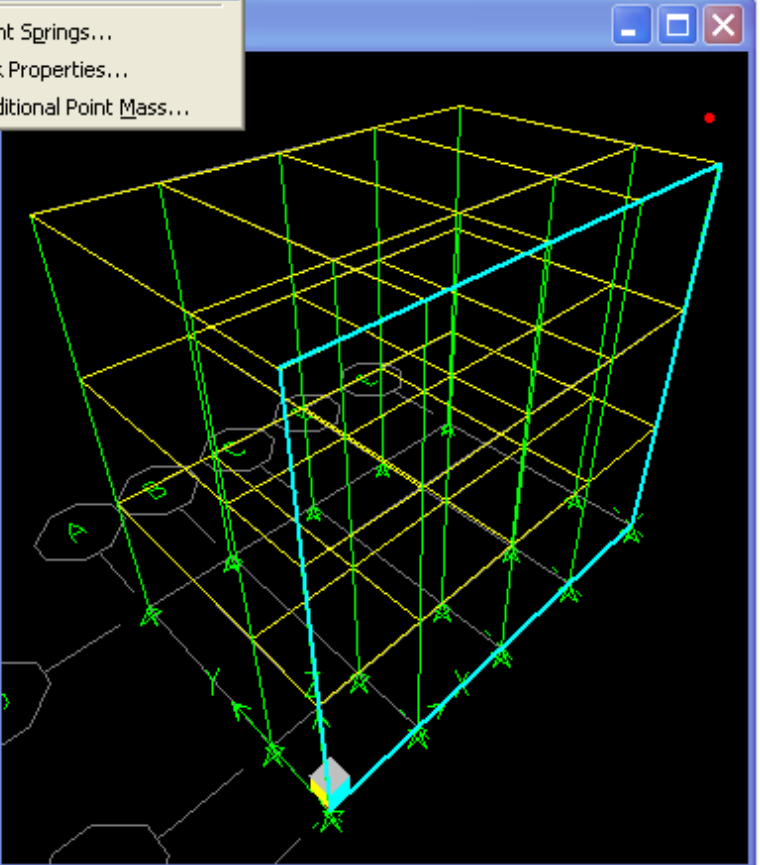
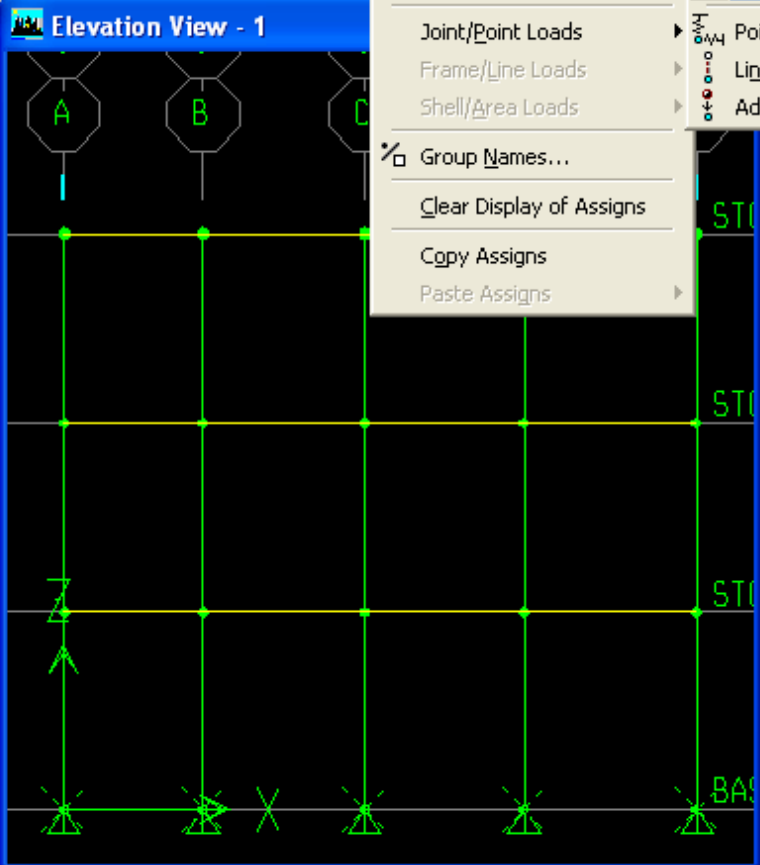
Plan View - STORY1 - Elevation 132

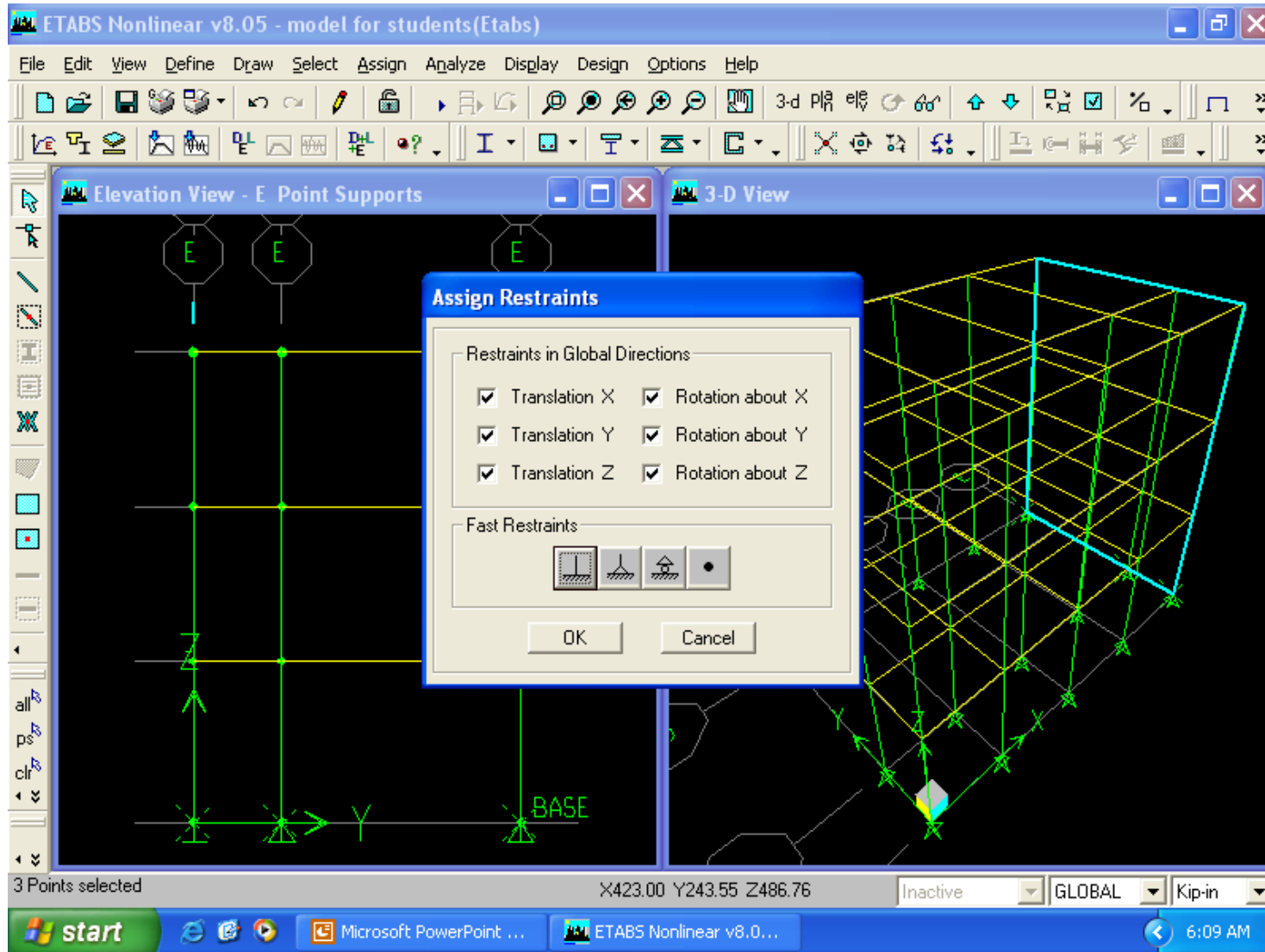
One Story GLOBAL Kip-in

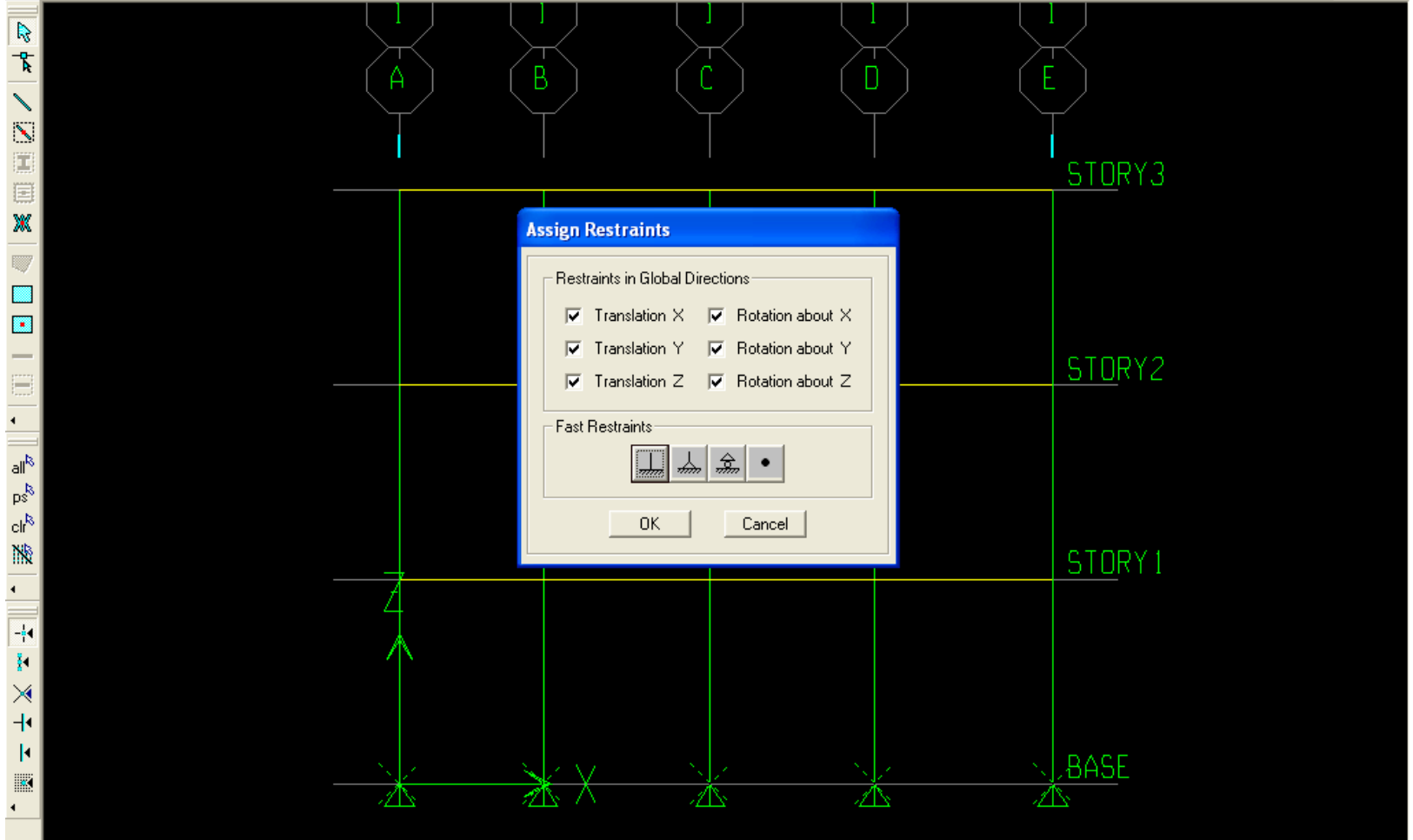
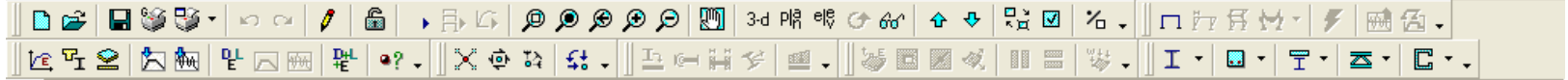


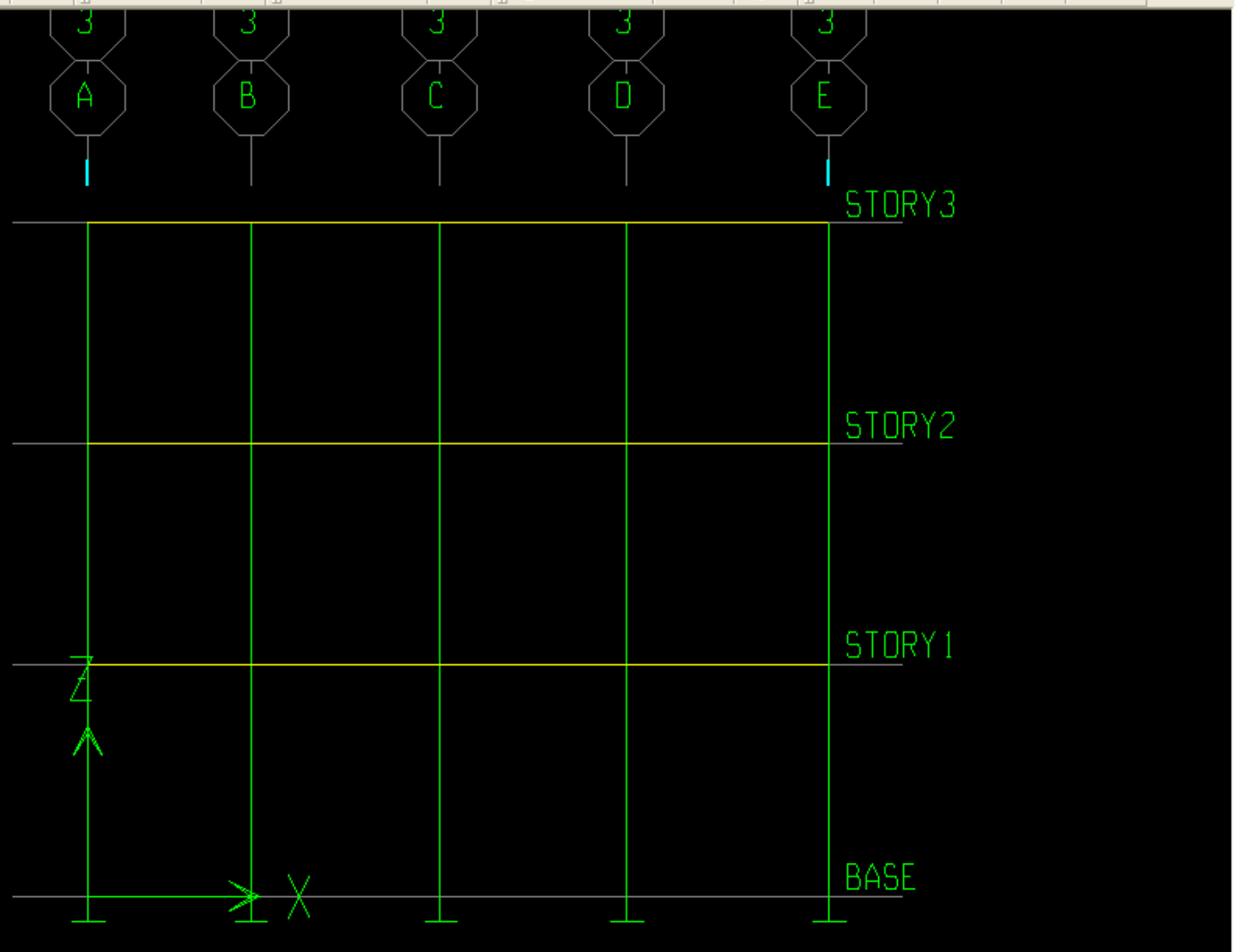
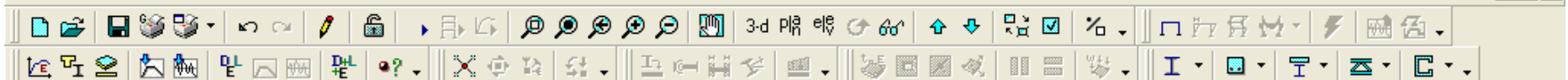


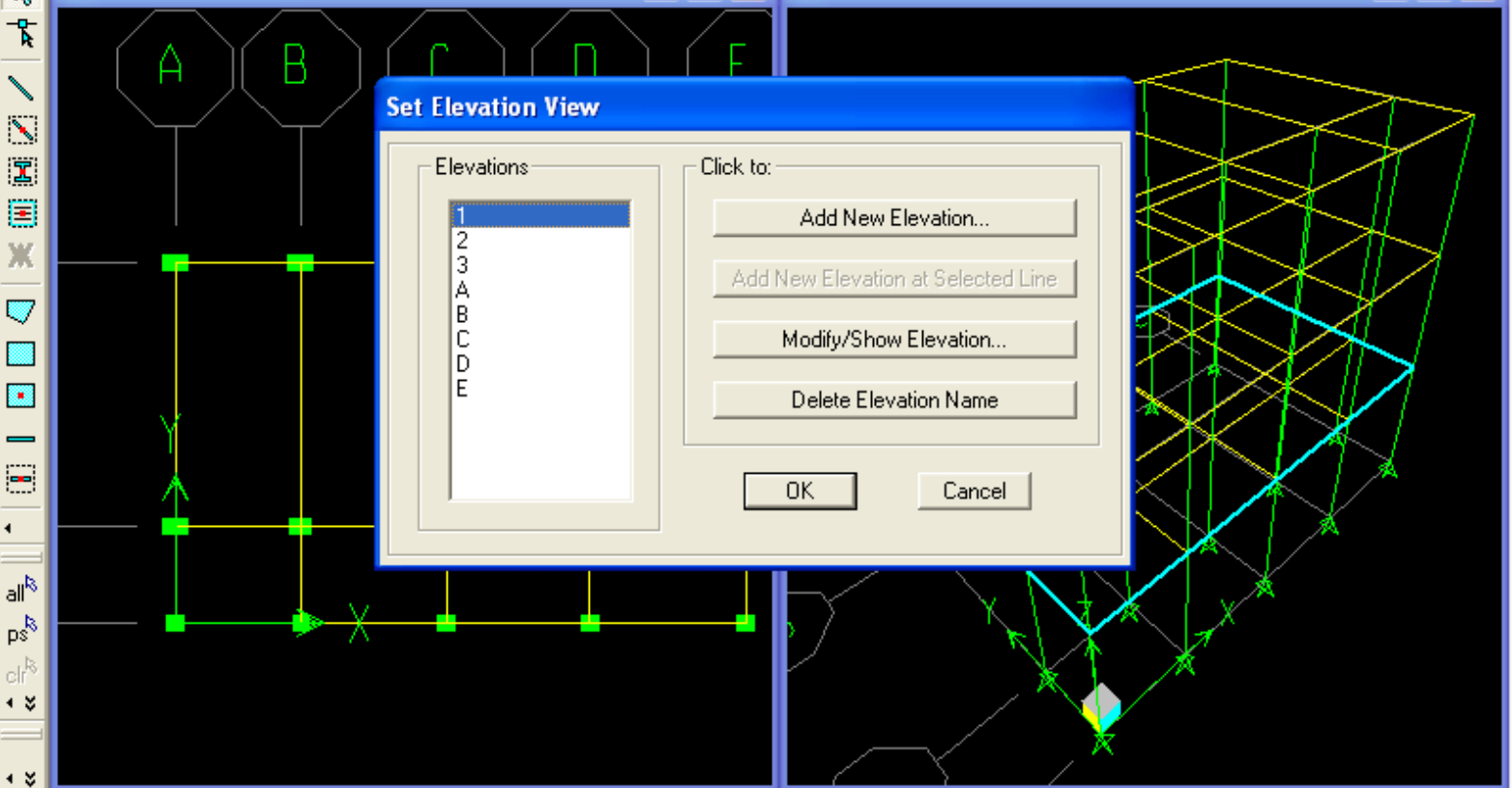
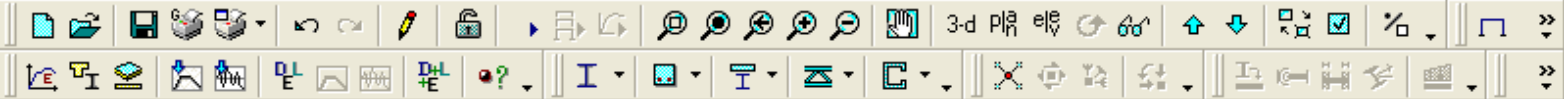
- Joint/Point
 - Rigid Diaphragm...
 - Panel Zone...
 - Restraints (Supports)...
 - Point Springs...
 - Link Properties...
 - Additional Point Mass...
- Frame/Line
- Shell/Area
- Joint/Point Loads
 - Frame/Line Loads
 - Shell/Area Loads
- Group Names...
- Clear Display of Assigns
- Copy Assigns
- Paste Assigns











Set Elevation View

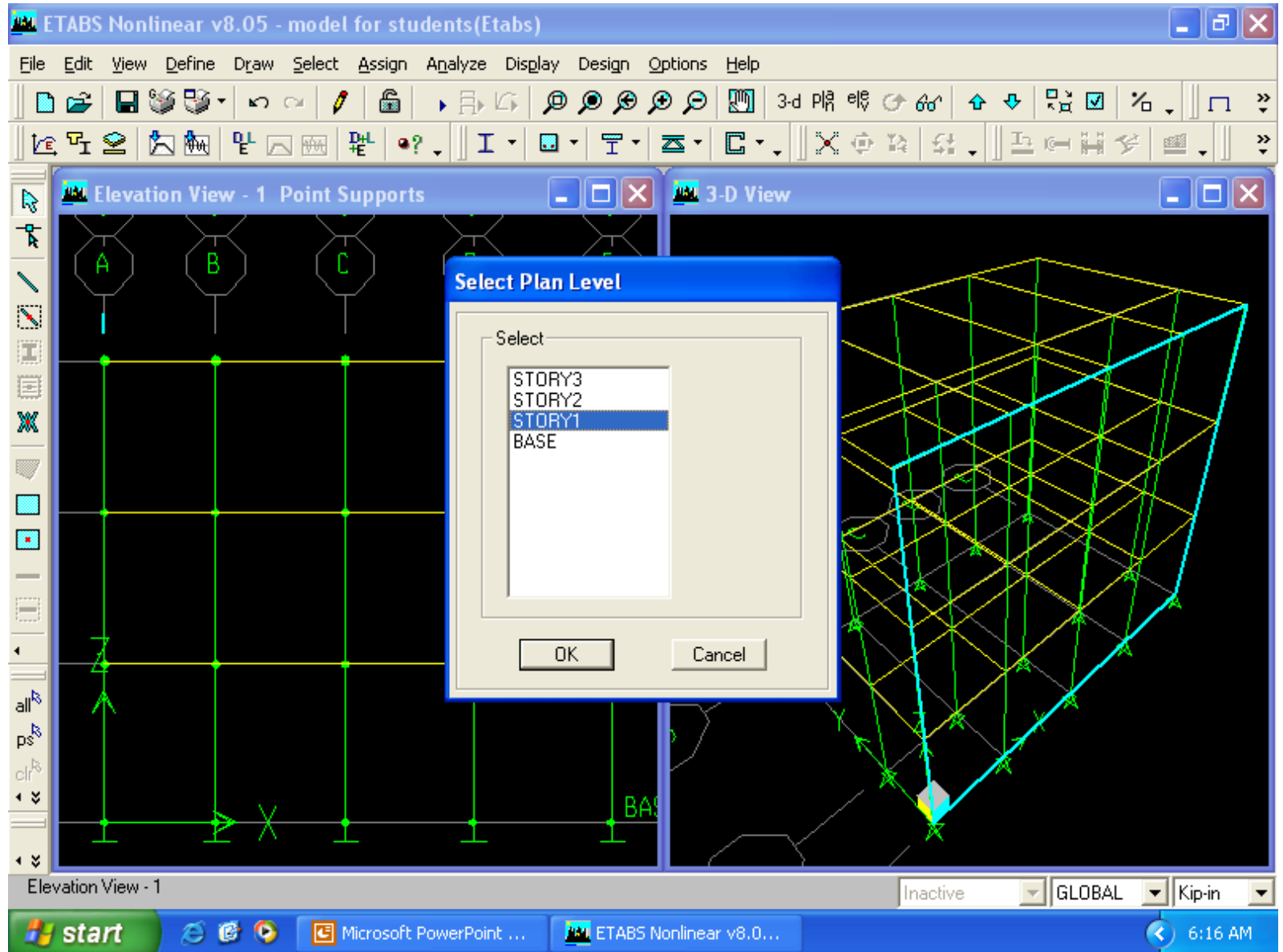
Elevations

- 1
- 2
- 3
- A
- B
- C
- D
- E

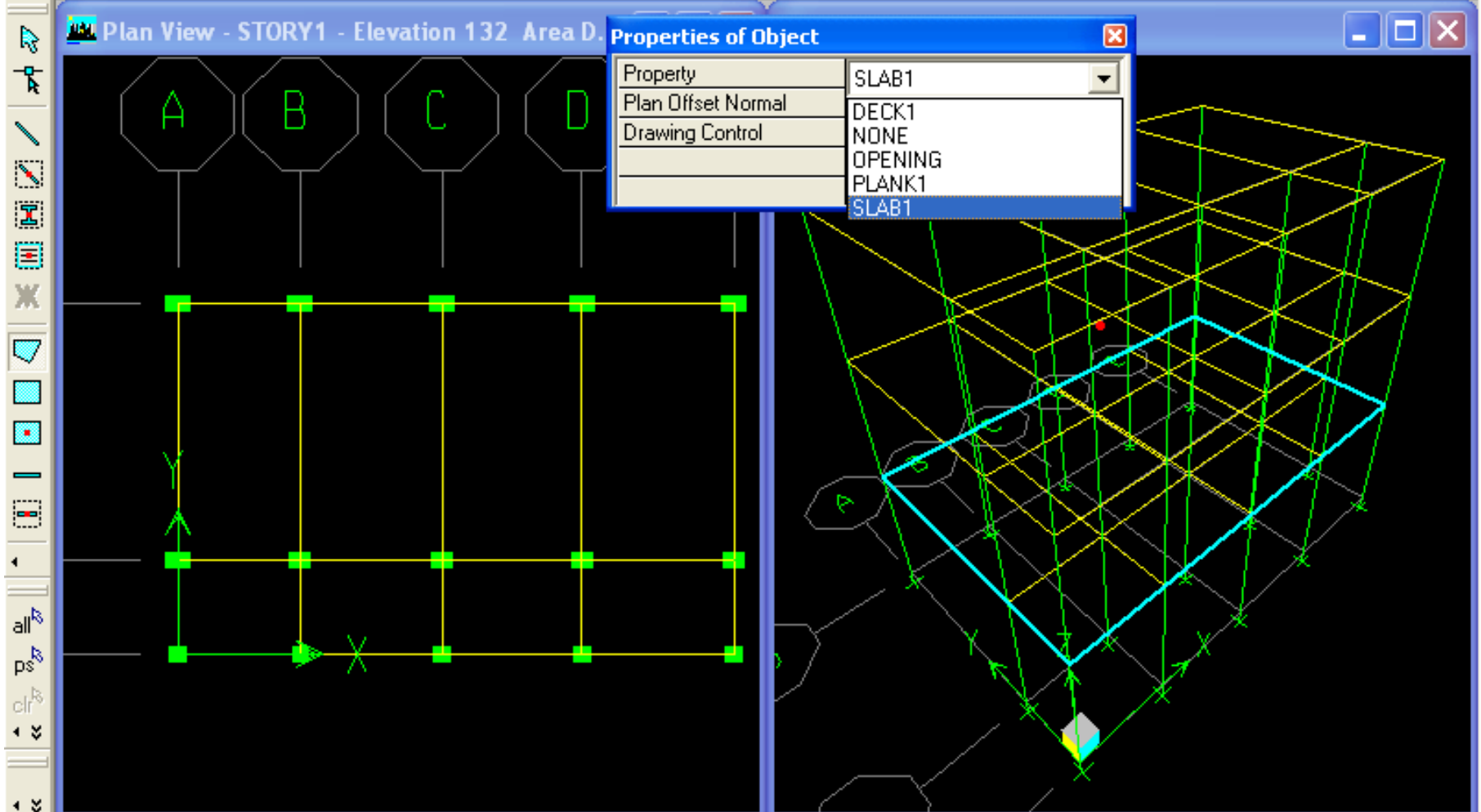
Click to:

- Add New Elevation...
- Add New Elevation at Selected Line
- Modify/Show Elevation...
- Delete Elevation Name

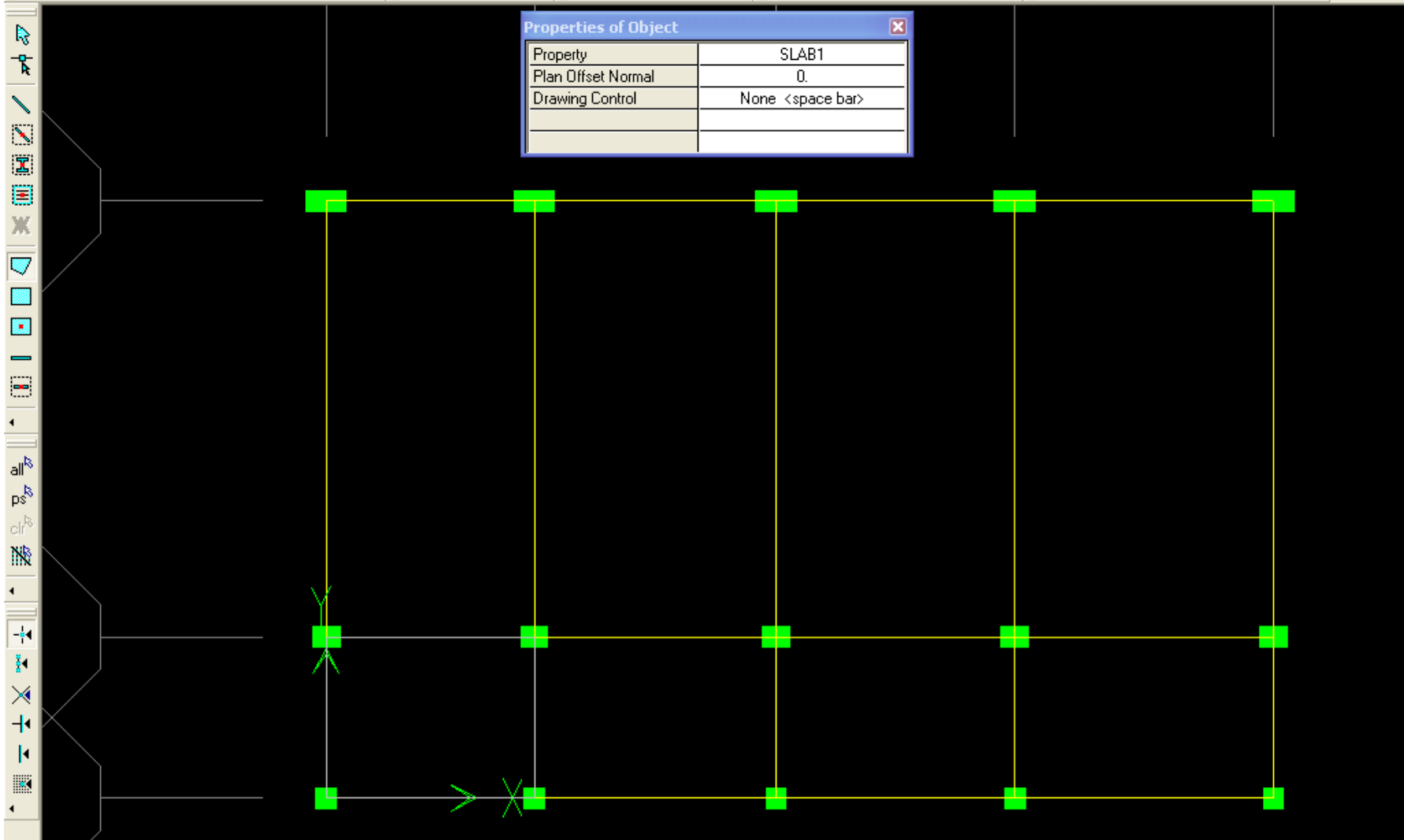
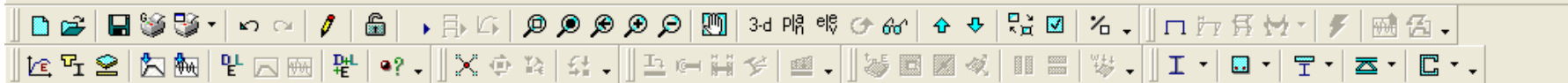
OK Cancel



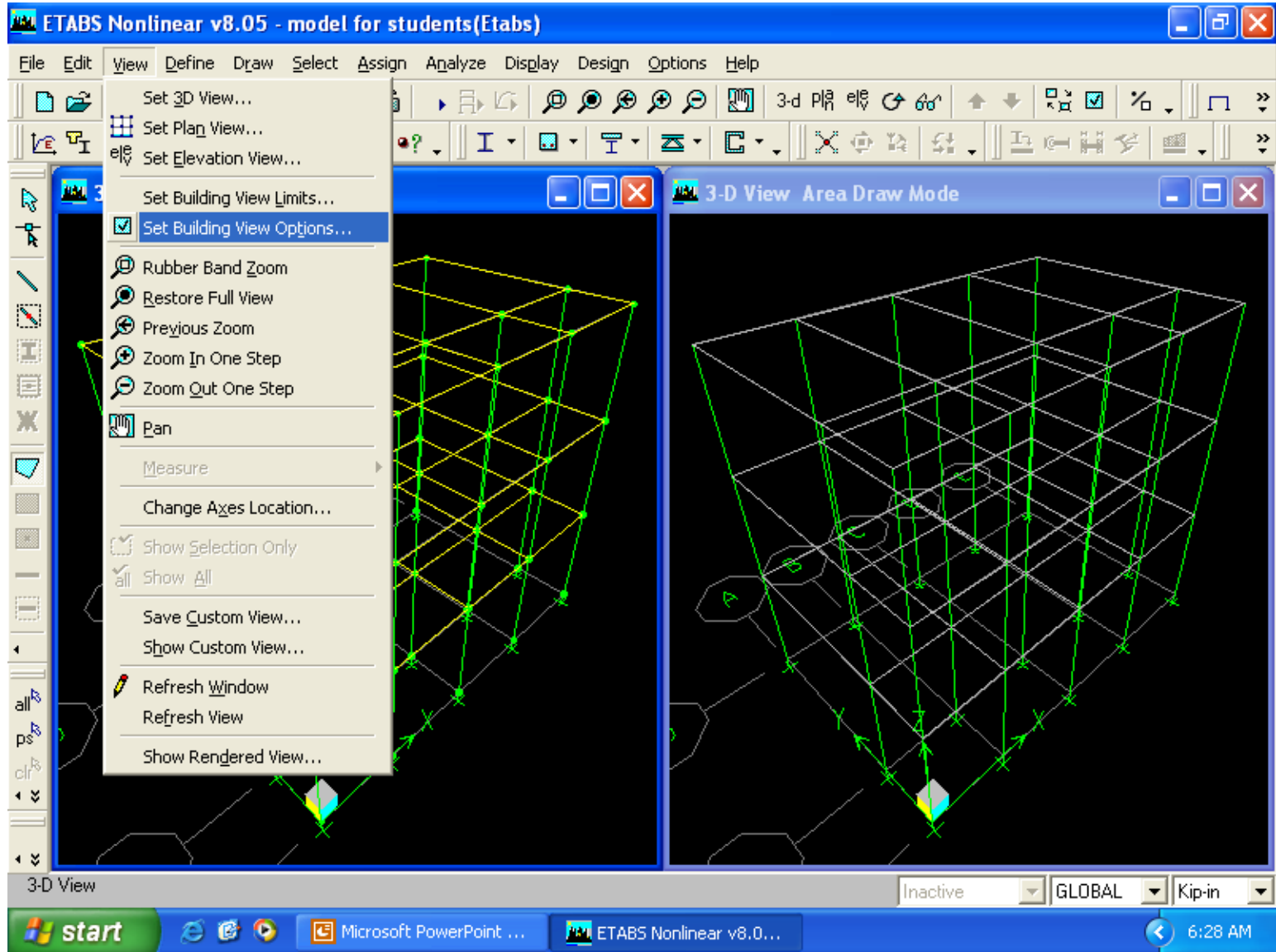
Plan View - STORY1 - Elevation 132 Area D.



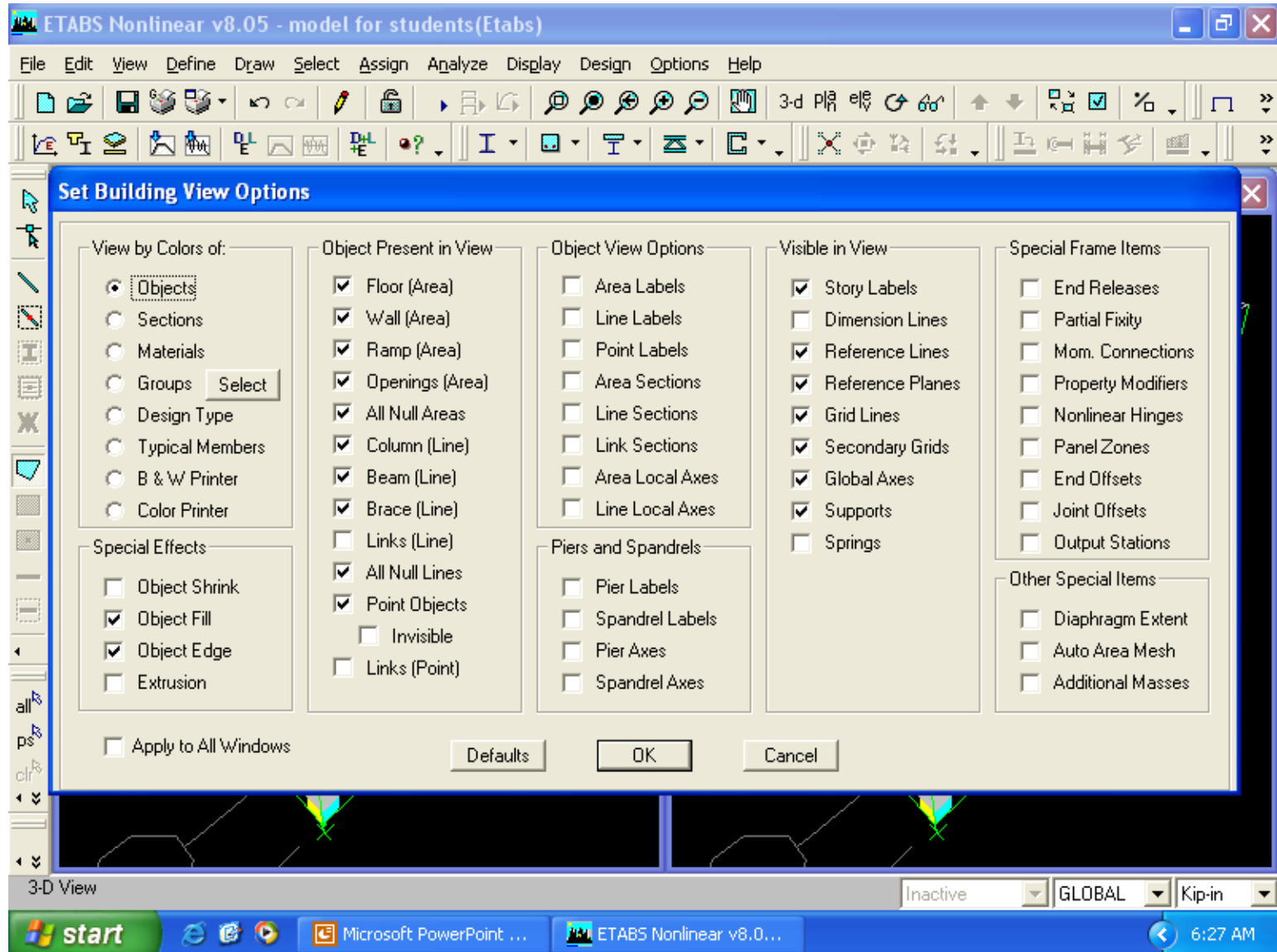
Property	SLAB1
Plan Offset Normal	DECK1
Drawing Control	NONE
	OPENING
	PLANK1
	SLAB1

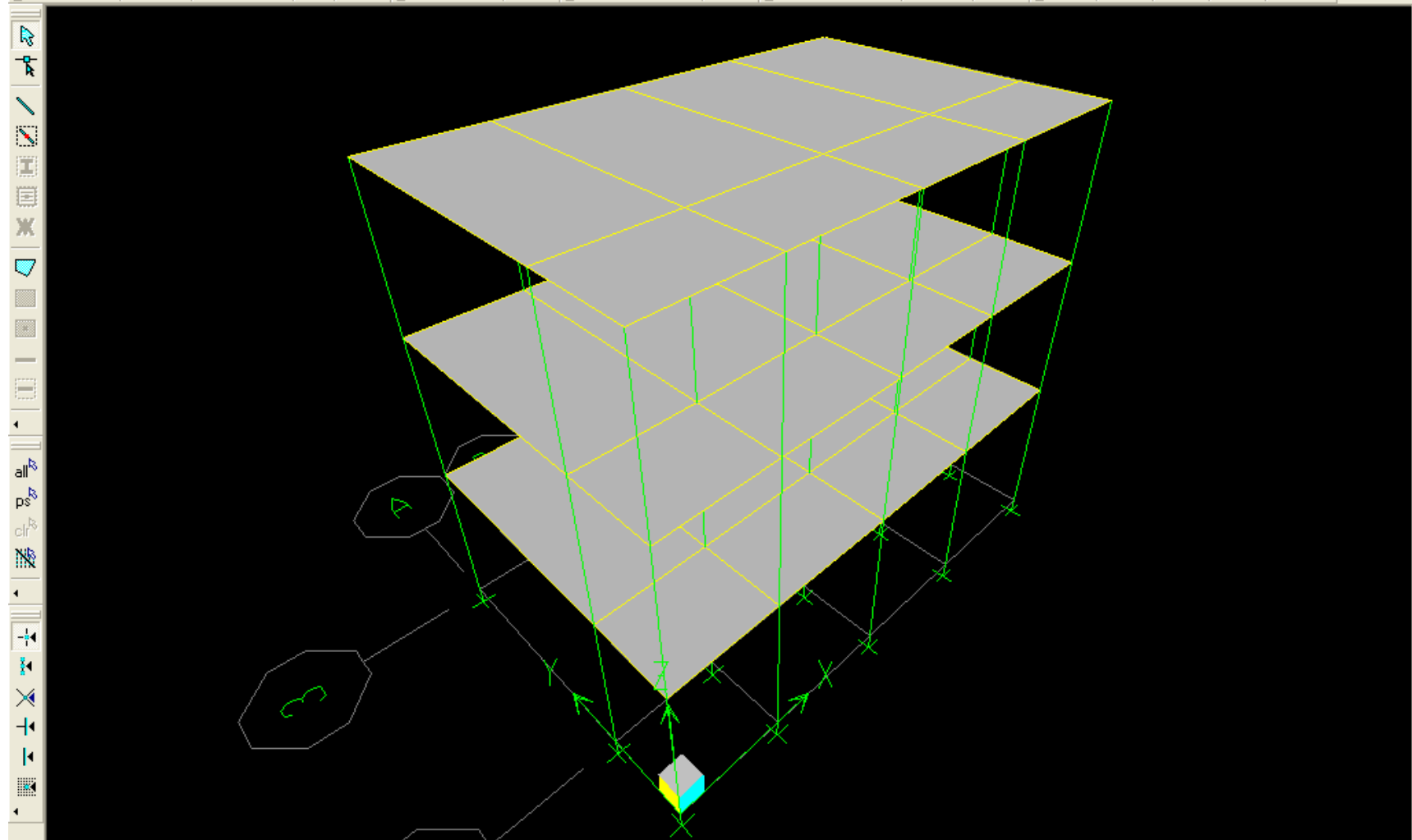


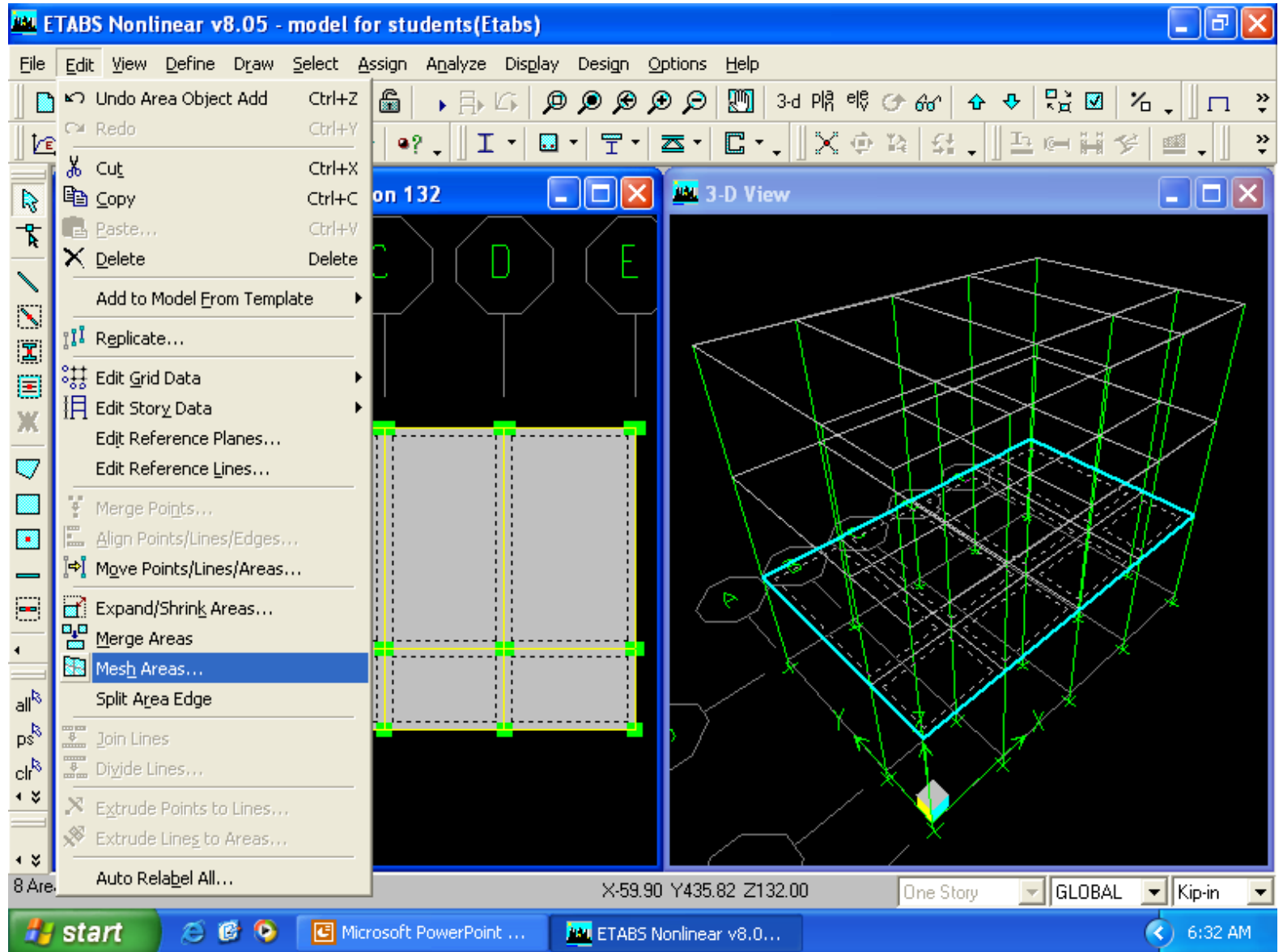
Property	SLAB1
Plan Offset Normal	0.
Drawing Control	None <space bar>

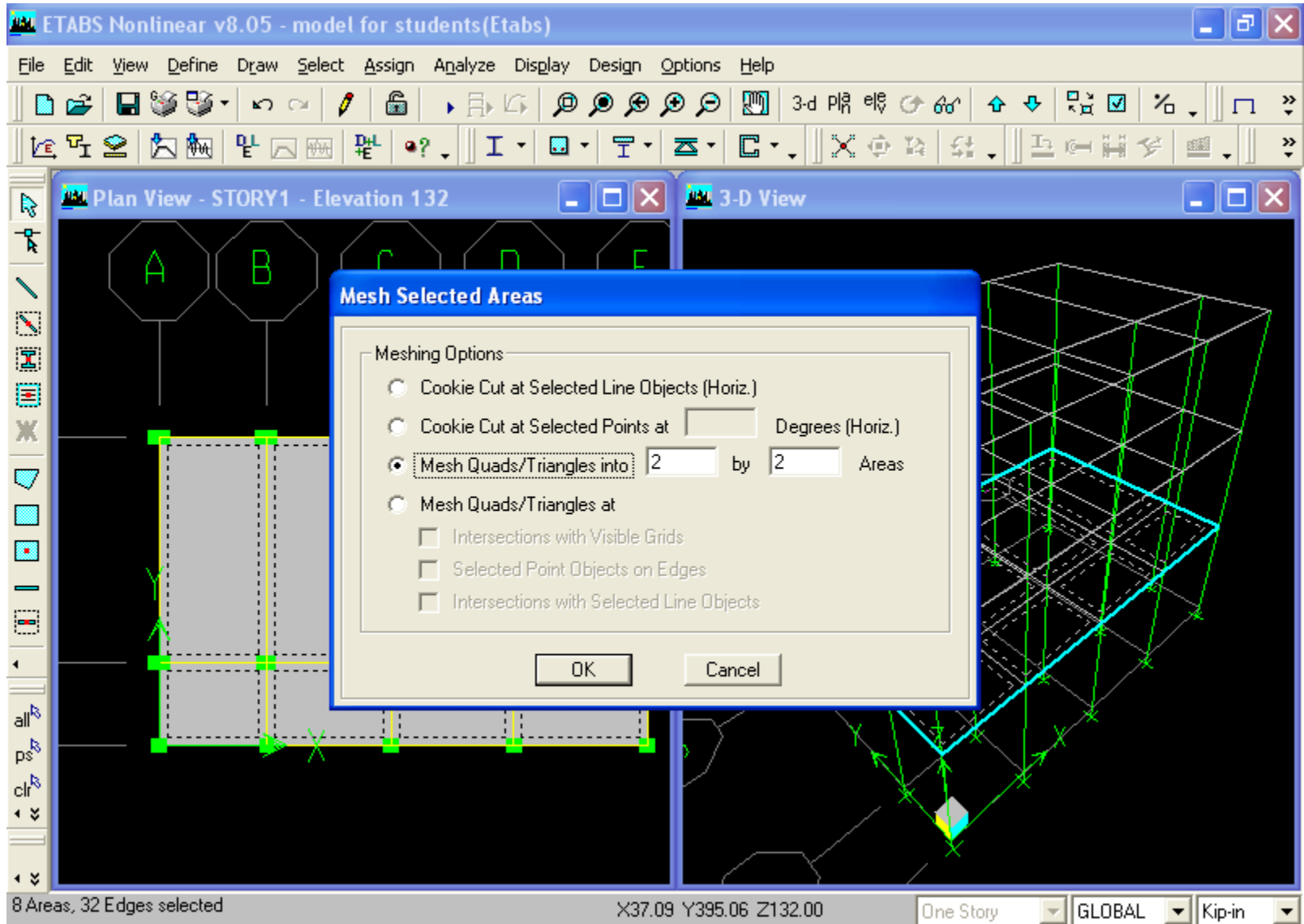


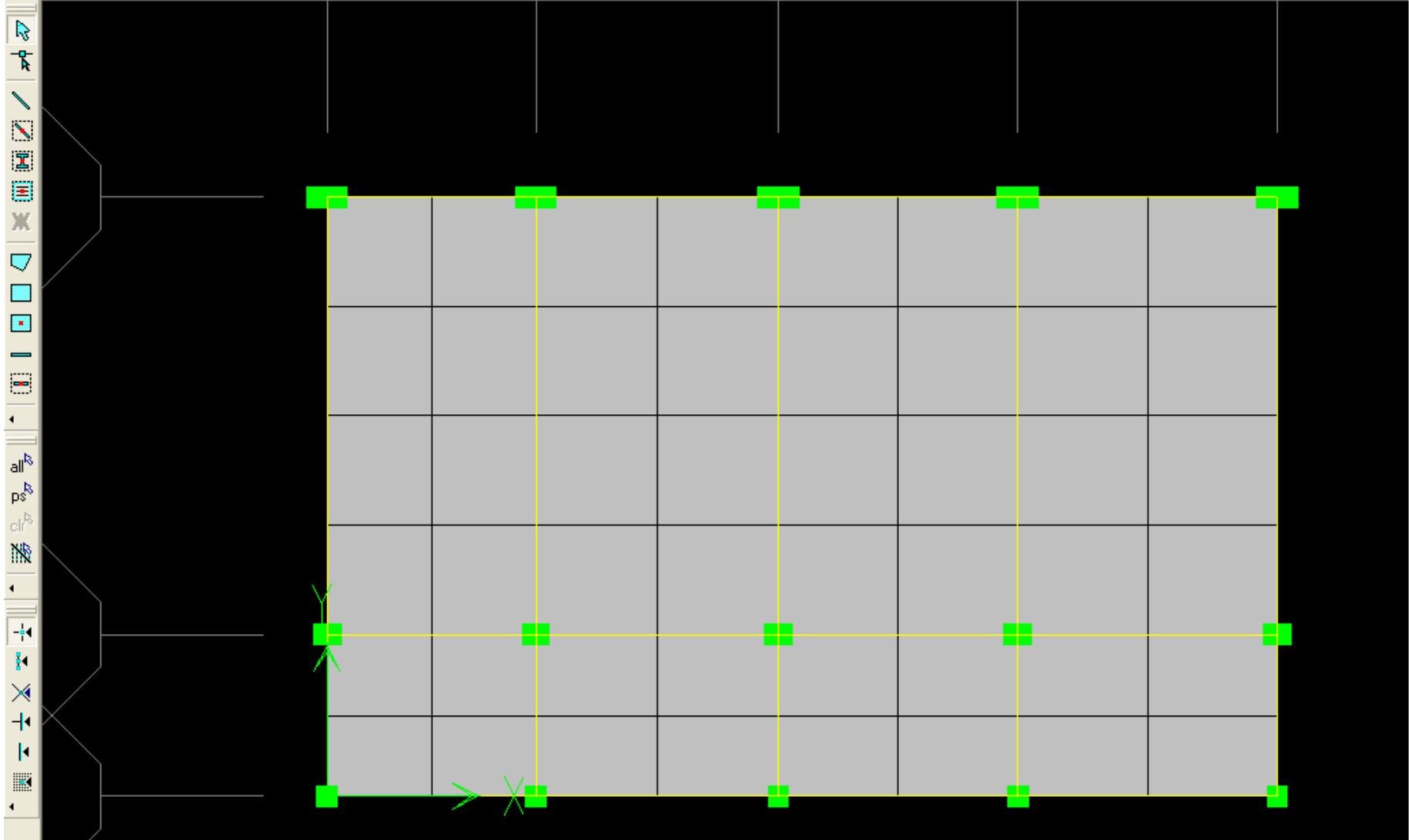
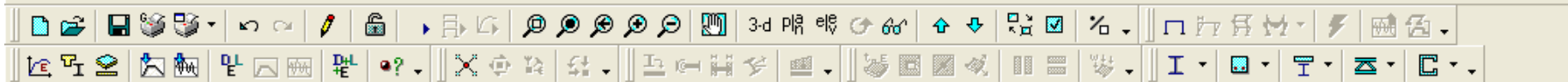
Click object fill

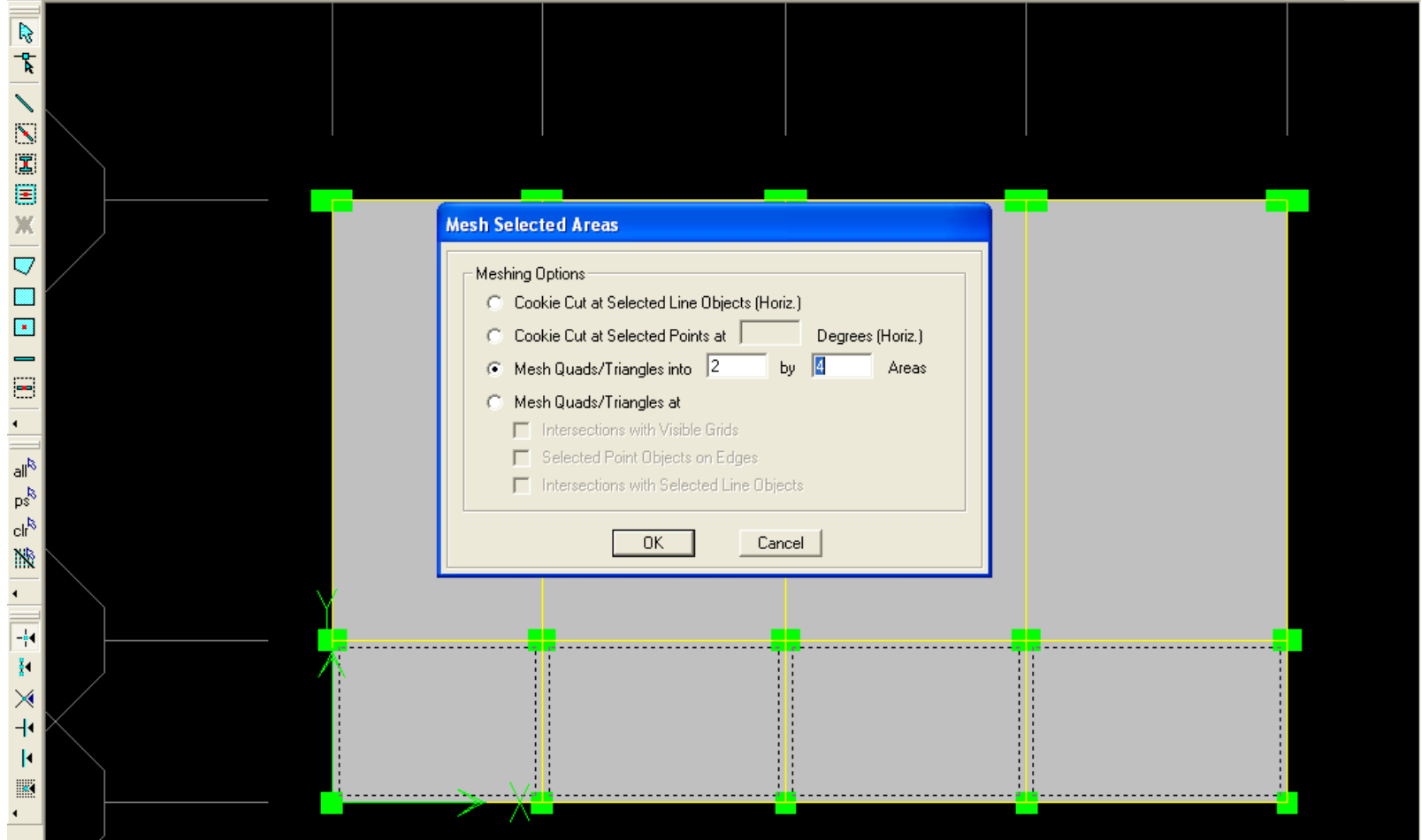
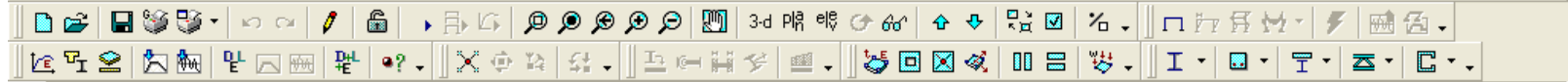








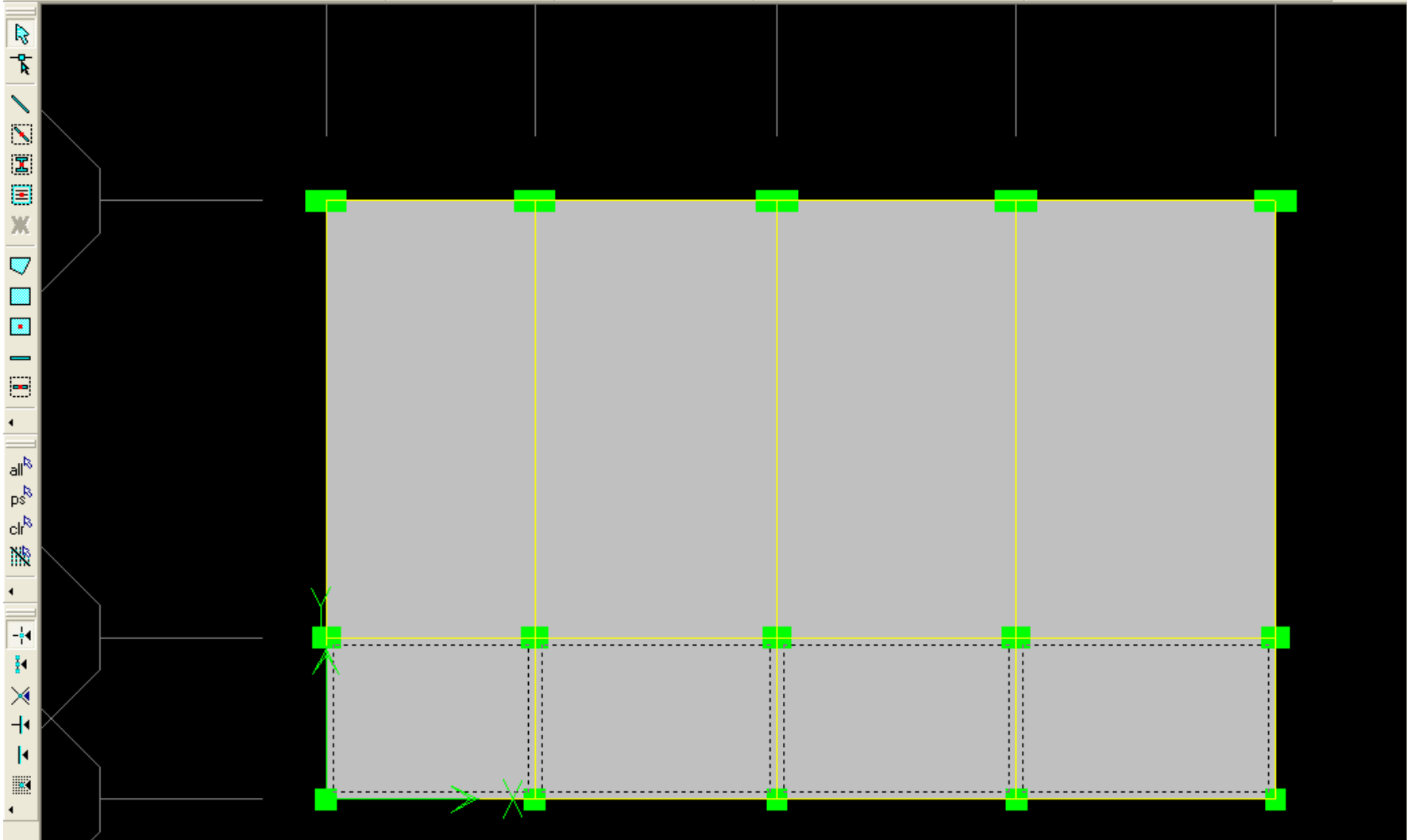
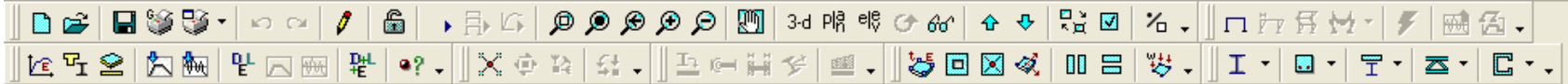




4 Areas, 16 Edges selected

X72.40 Y344.21 Z132.00

One Story GLOBAL Kip-in



4 Areas, 16 Edges selected

X354.53 Y40.66 Z258.00

One Story

GLOBAL

Kip-in



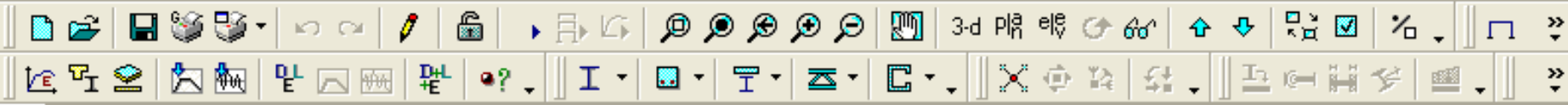
ETABS Nonlinear v8.0...

Microsoft PowerPoint ...

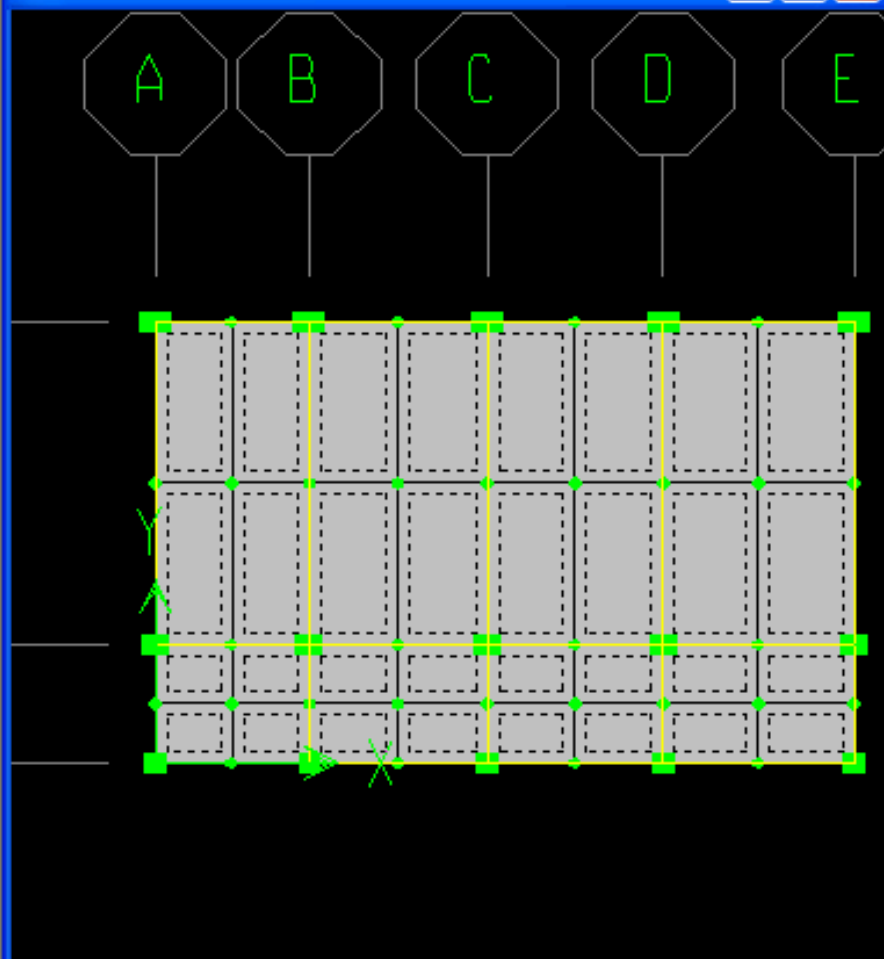
Qaiser



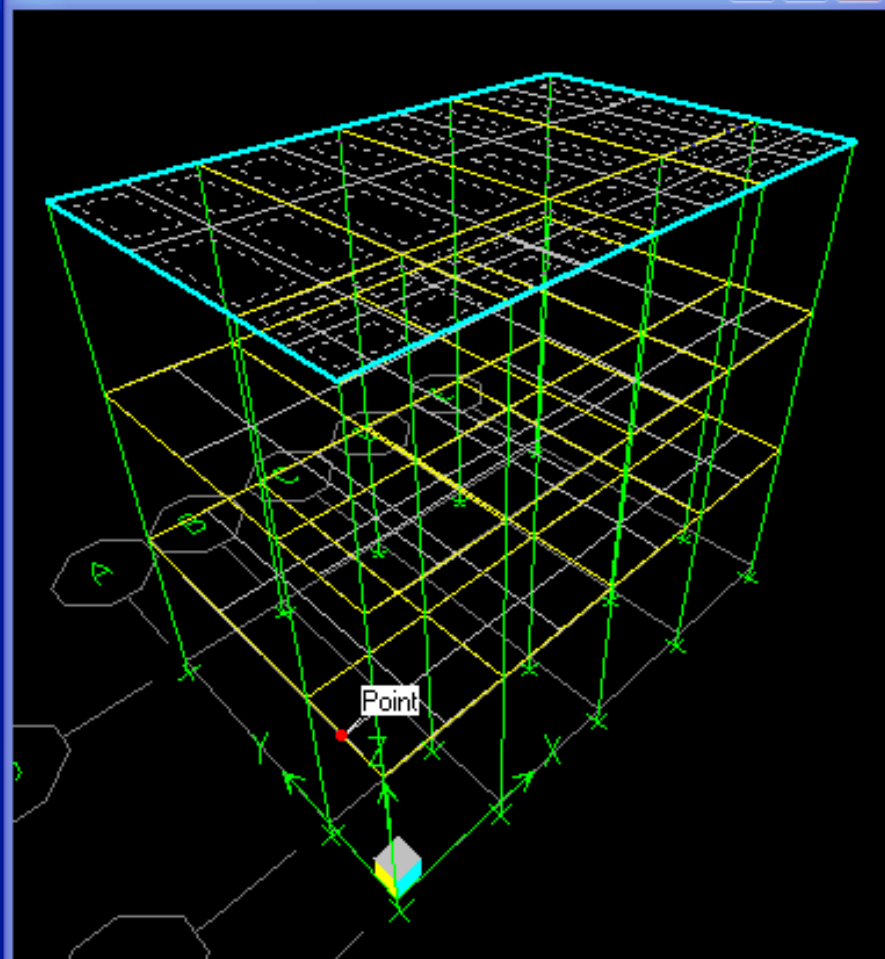
3:19 AM



Plan View - STORY3 - Elevation 384



3-D View



32 Areas, 128 Edges selected

X0.00 Y36.00 Z132.00

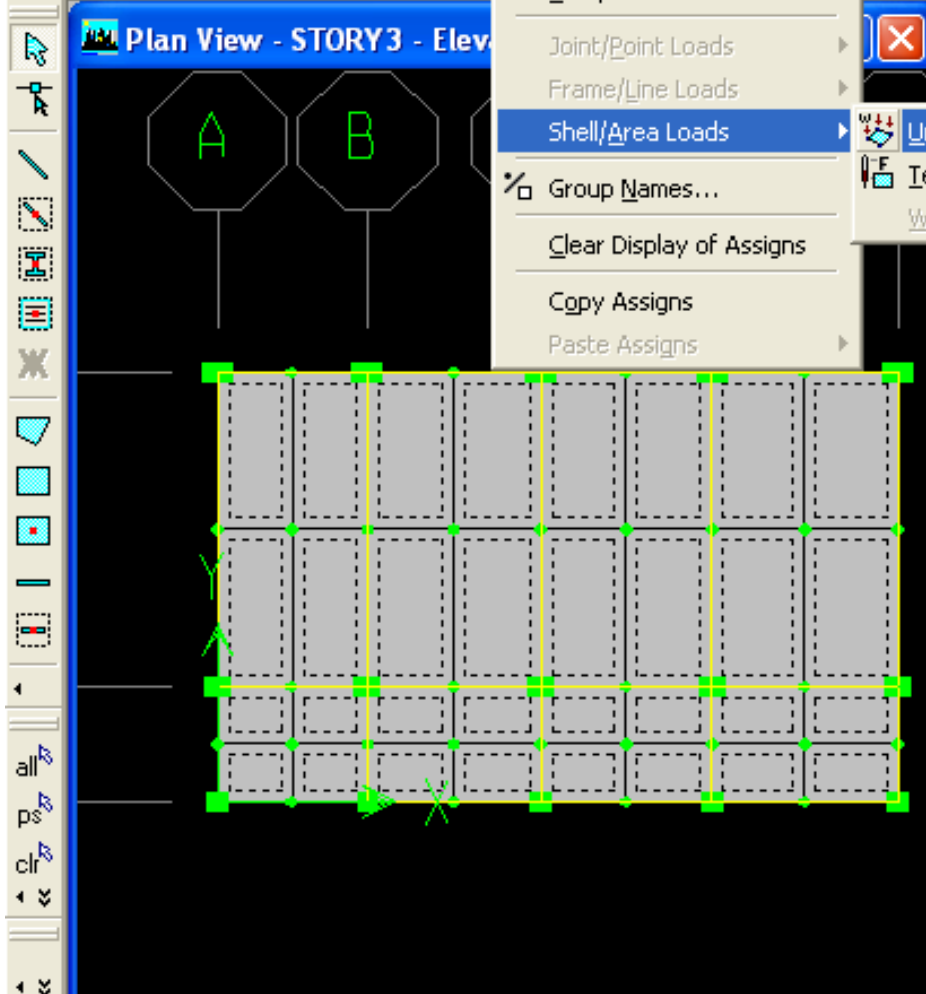
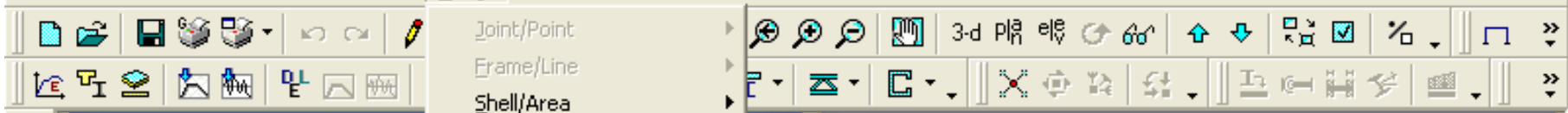
One Story GLOBAL Kip-in



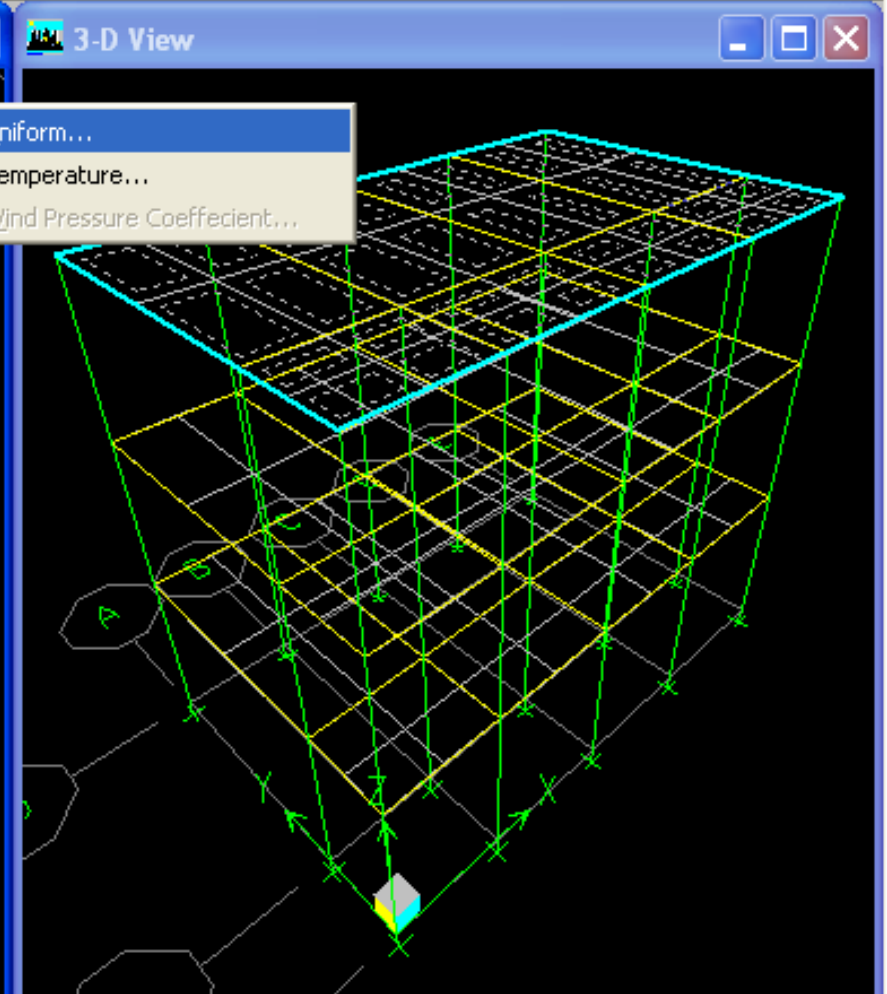
Microsoft PowerPoint ...

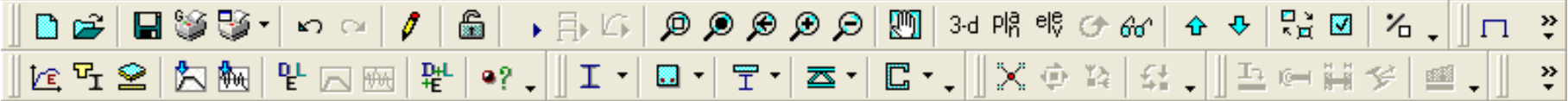
ETABS Nonlinear v8.0...

6:36 AM



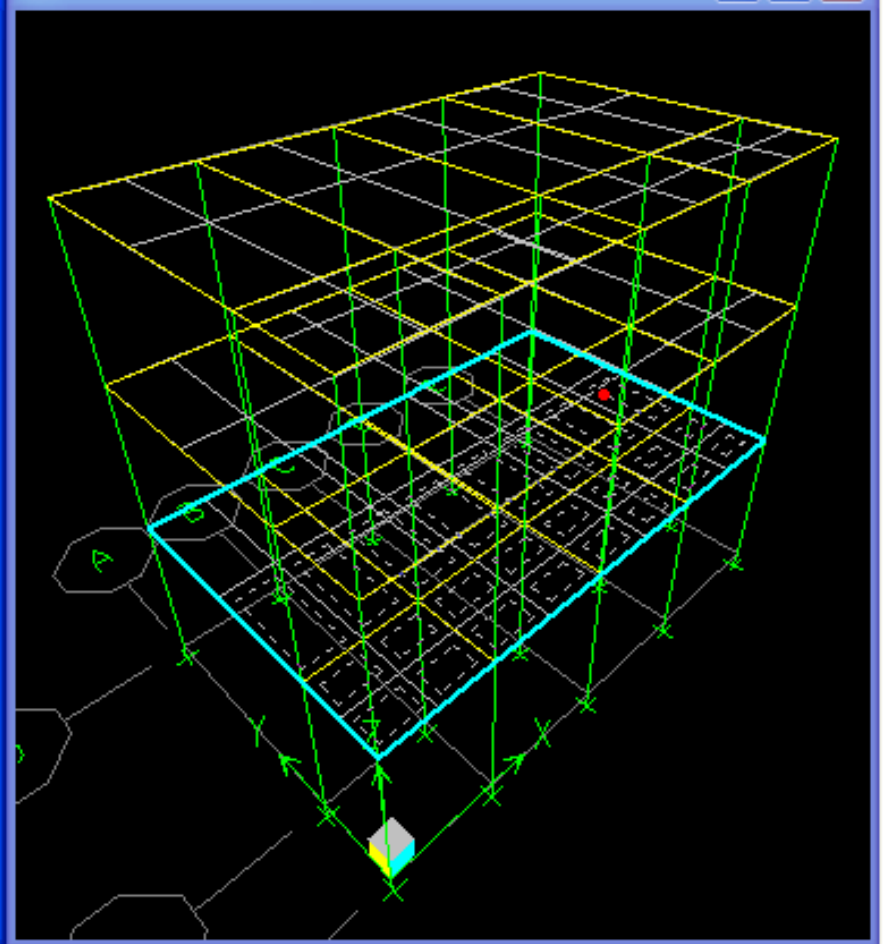
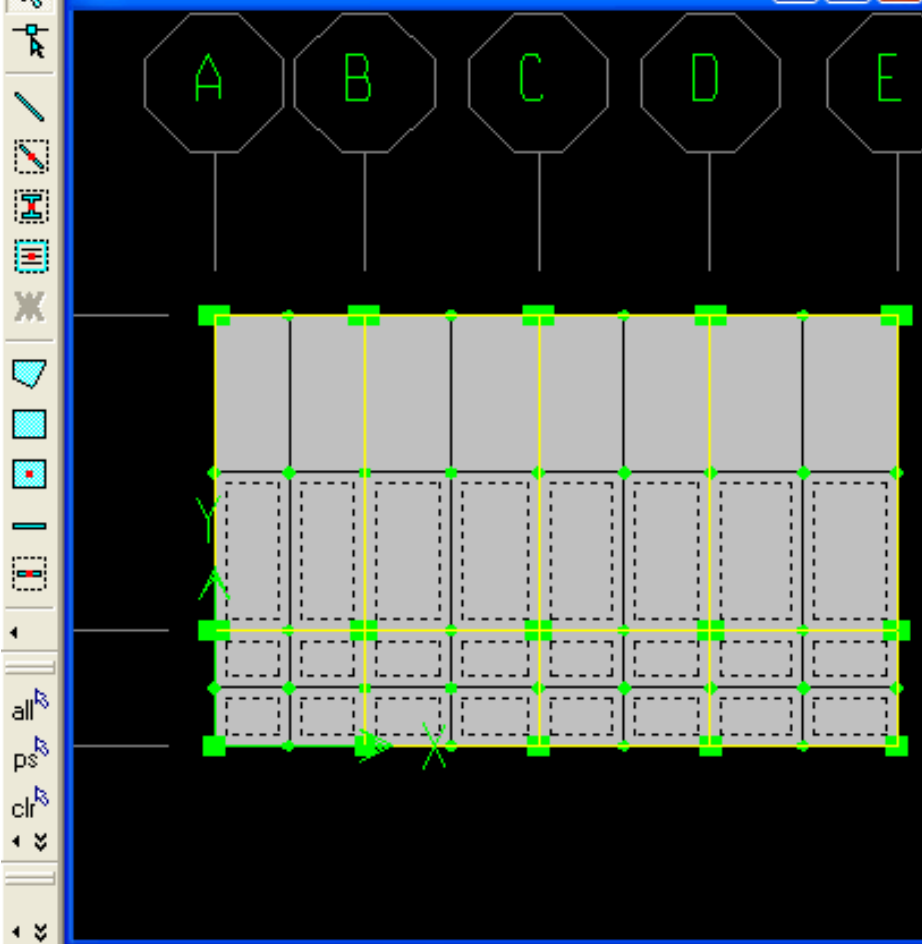
- Joint/Point
- Frame/Line
- Shell/Area
- Joint/Point Loads
- Frame/Line Loads
- Shell/Area Loads
 - Uniform...
 - Temperature...
 - Wind Pressure Coefficient...
- Group Names...
- Clear Display of Assigns
- Copy Assigns
- Paste Assigns

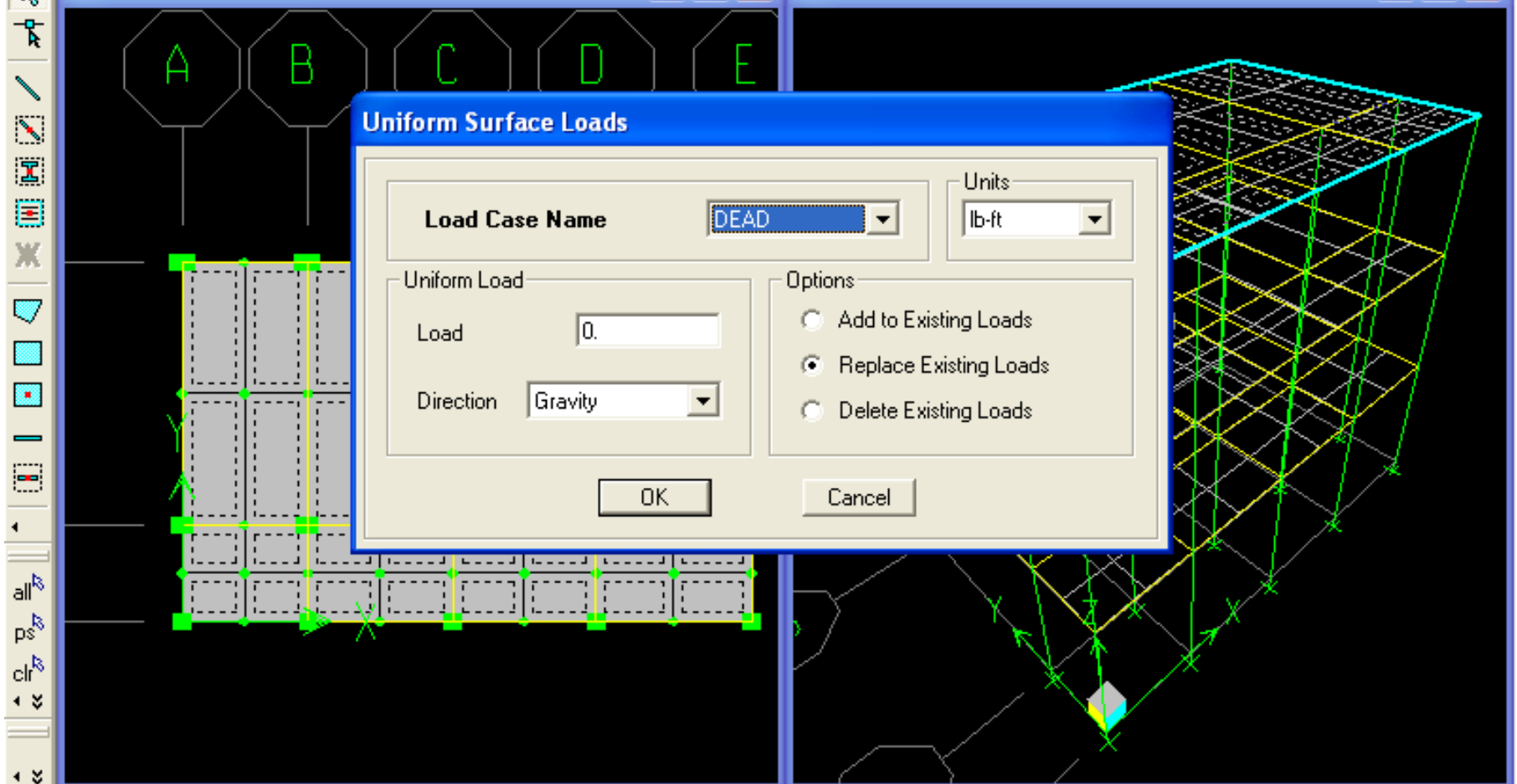
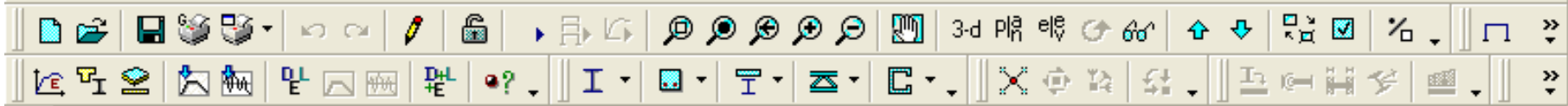


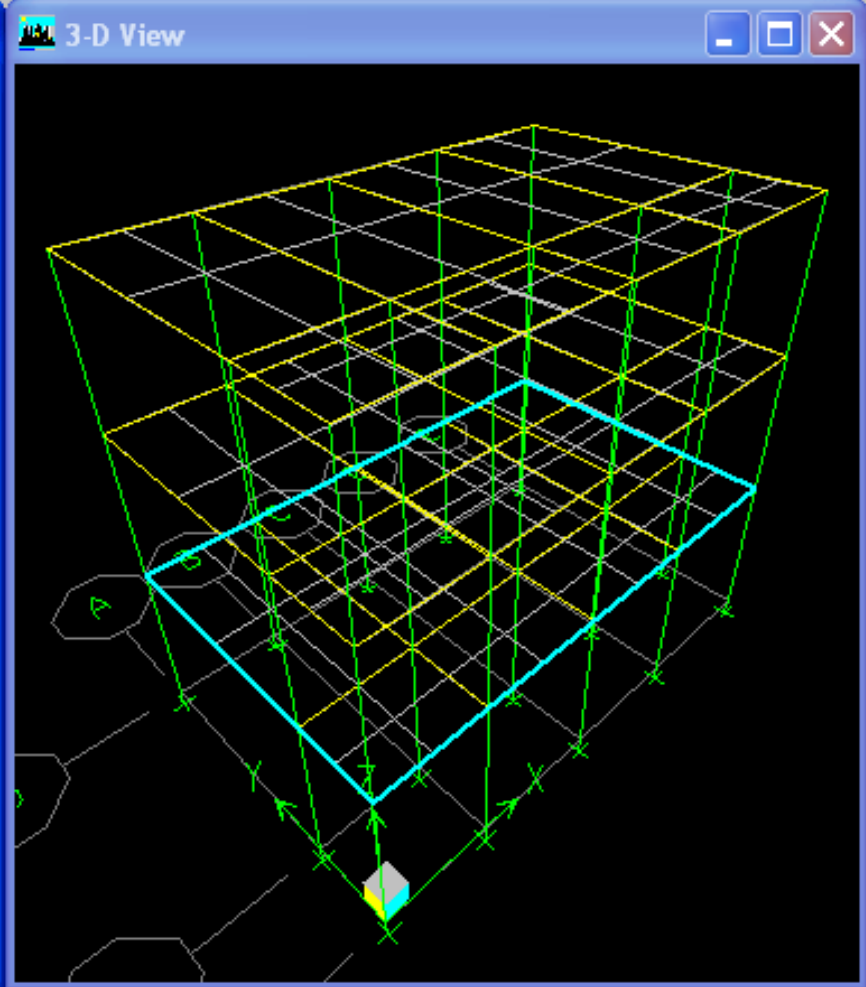
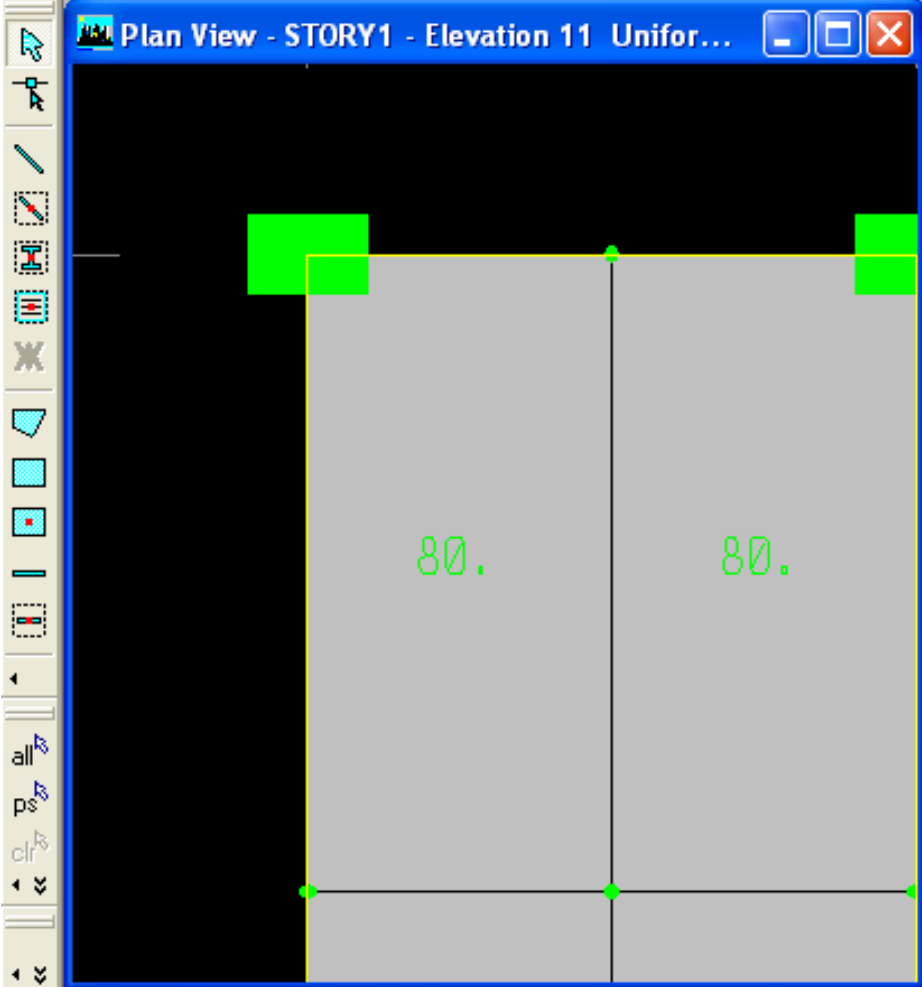
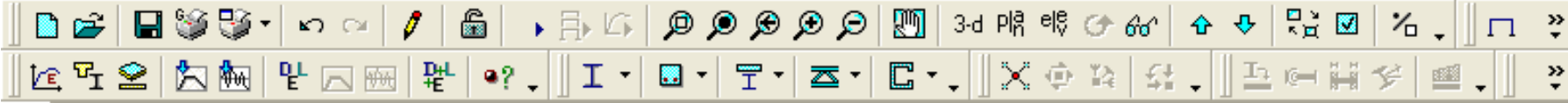


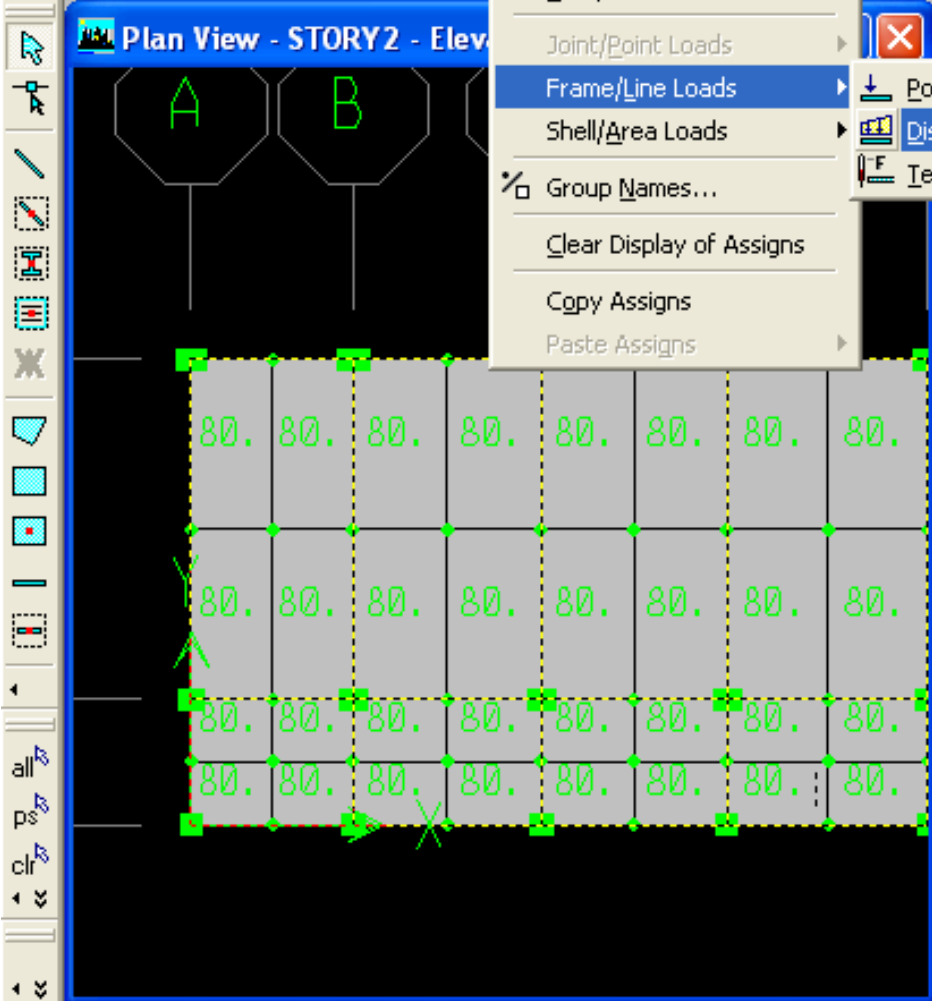
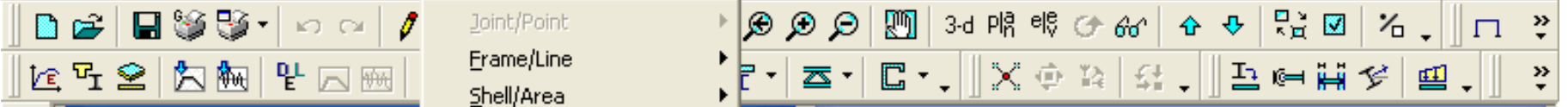
Plan View - STORY1 - Elevation 132 Unifor...

3-D View

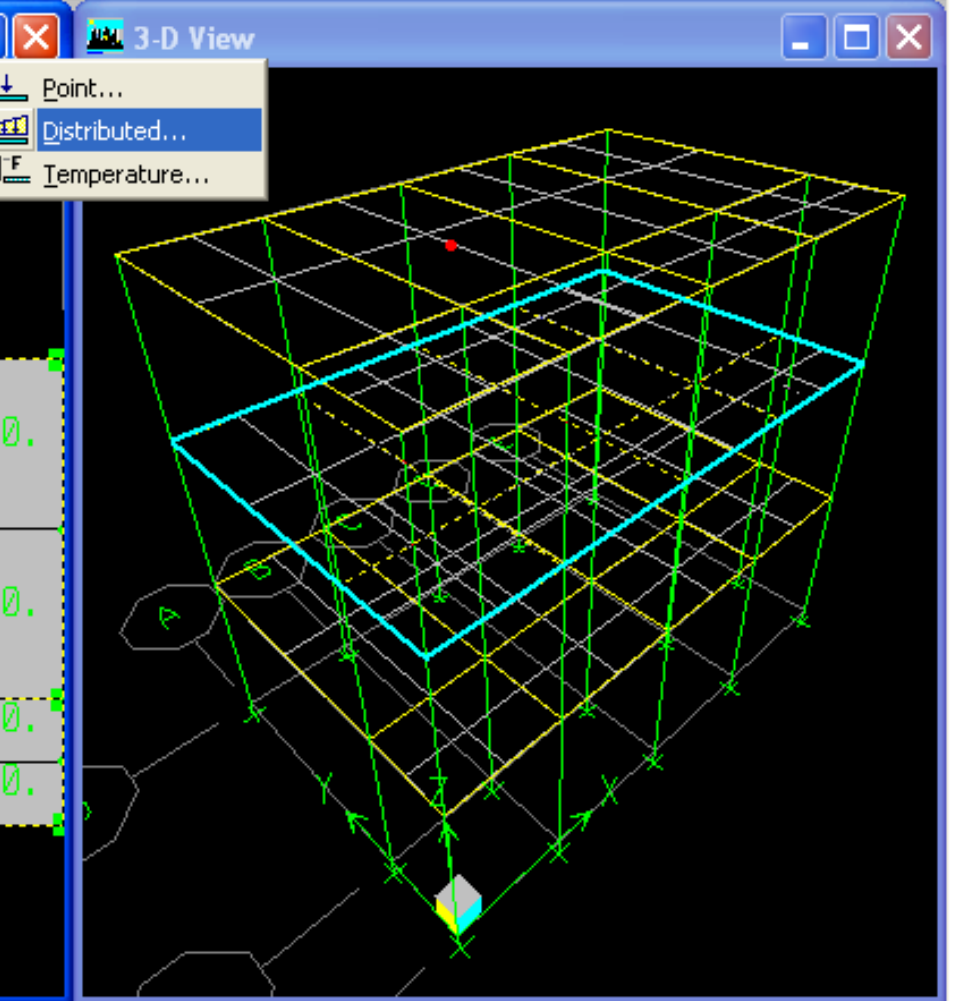


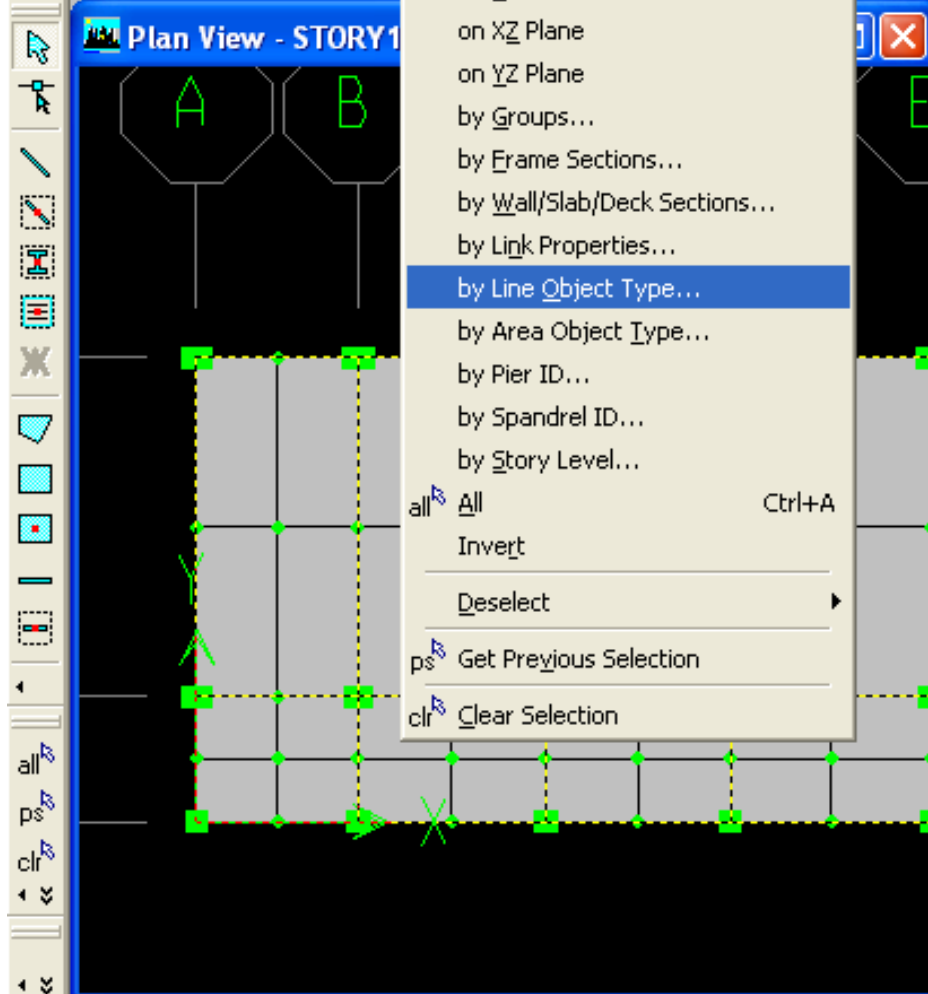
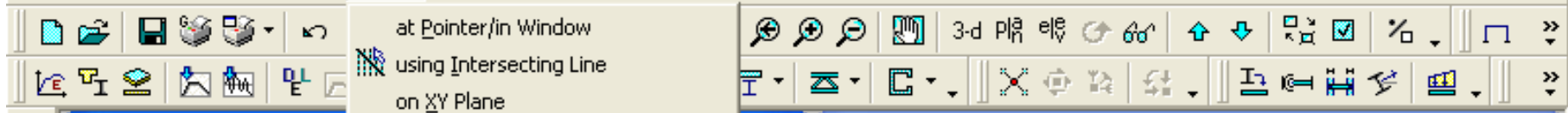




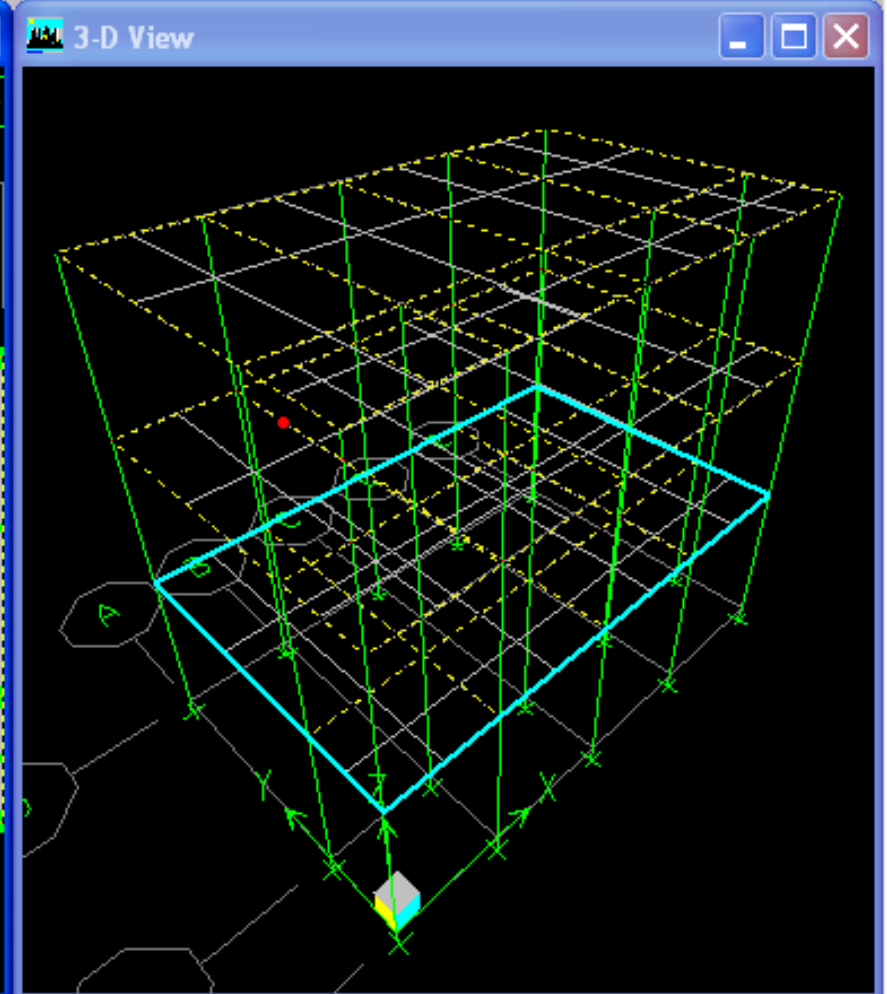


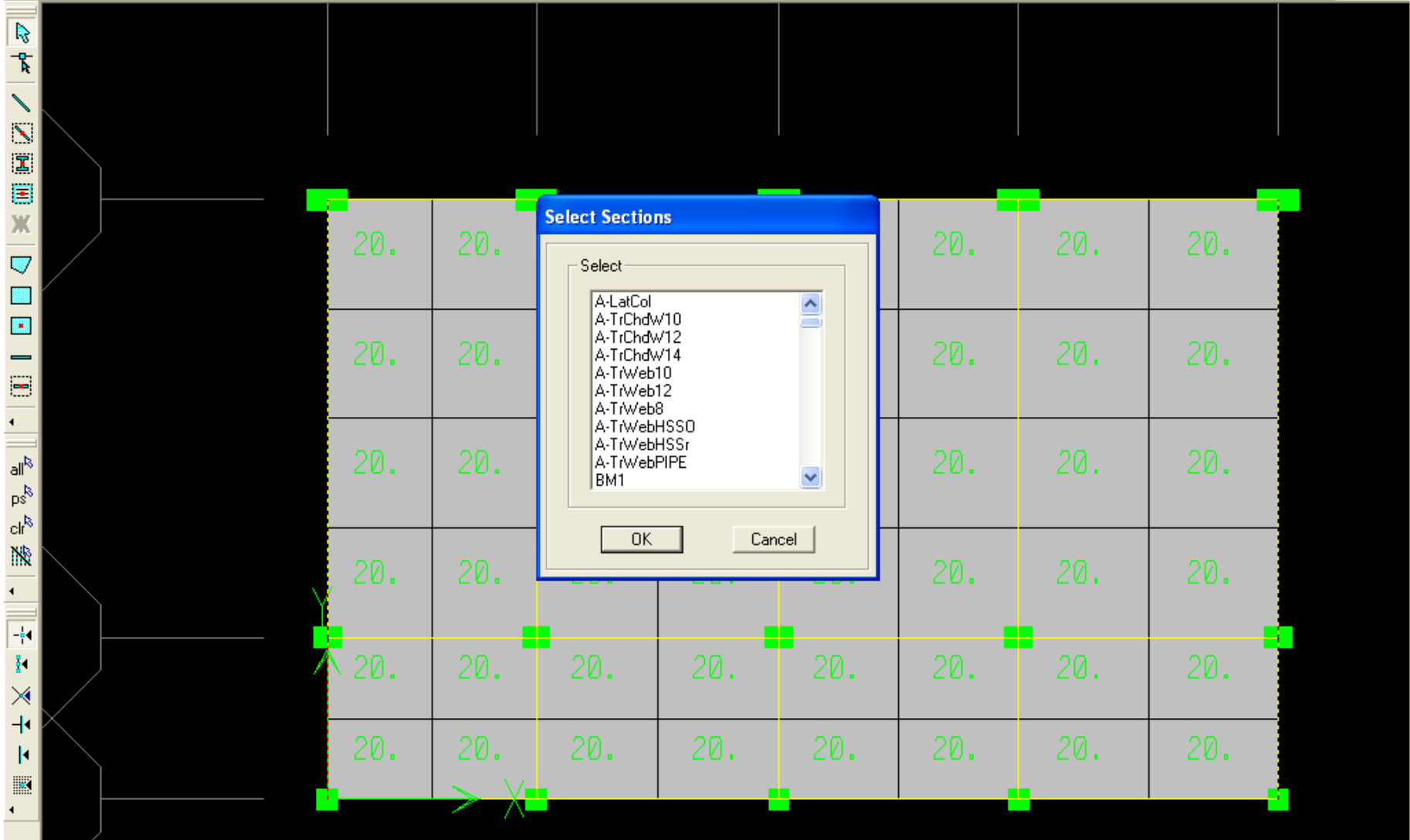
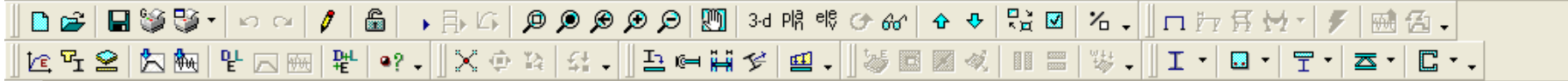
- Joint/Point
- Frame/Line
- Shell/Area
- Joint/Point Loads
- Frame/Line Loads
- Shell/Area Loads
- Group Names...
- Clear Display of Assigns
- Copy Assigns
- Paste Assigns

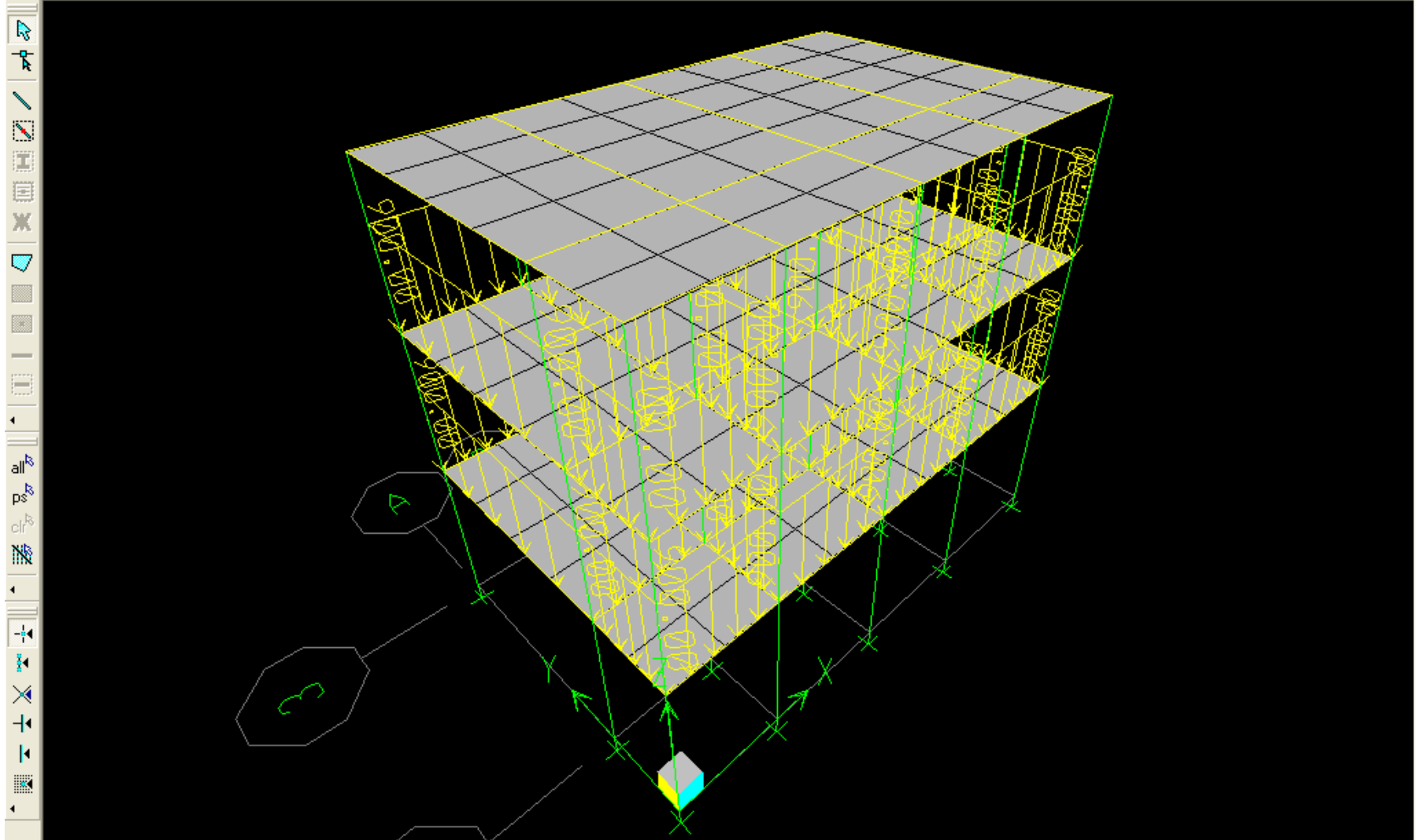
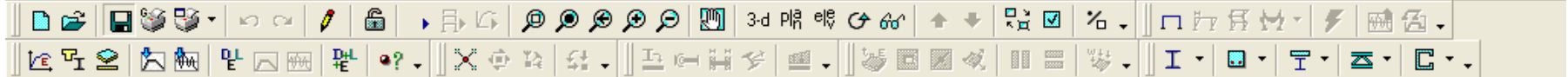


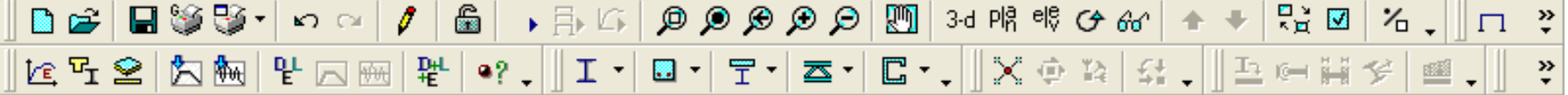


- at Pointer/In Window
- using Intersecting Line
- on XY Plane
- on XZ Plane
- on YZ Plane
- by Groups...
- by Frame Sections...
- by Wall/Slab/Deck Sections...
- by Link Properties...
- by Line Object Type...
- by Area Object Type...
- by Pier ID...
- by Spandrel ID...
- by Story Level...
- all All Ctrl+A
- Invert
- Deselect
- ps Get Previous Selection
- clr Clear Selection

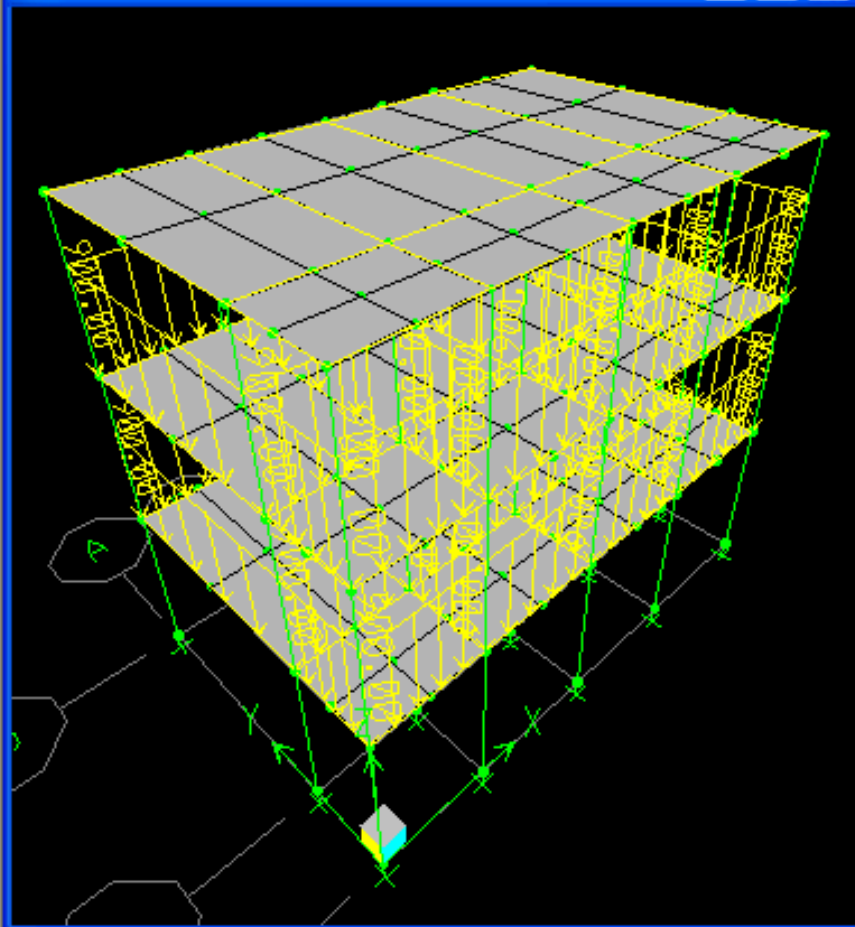




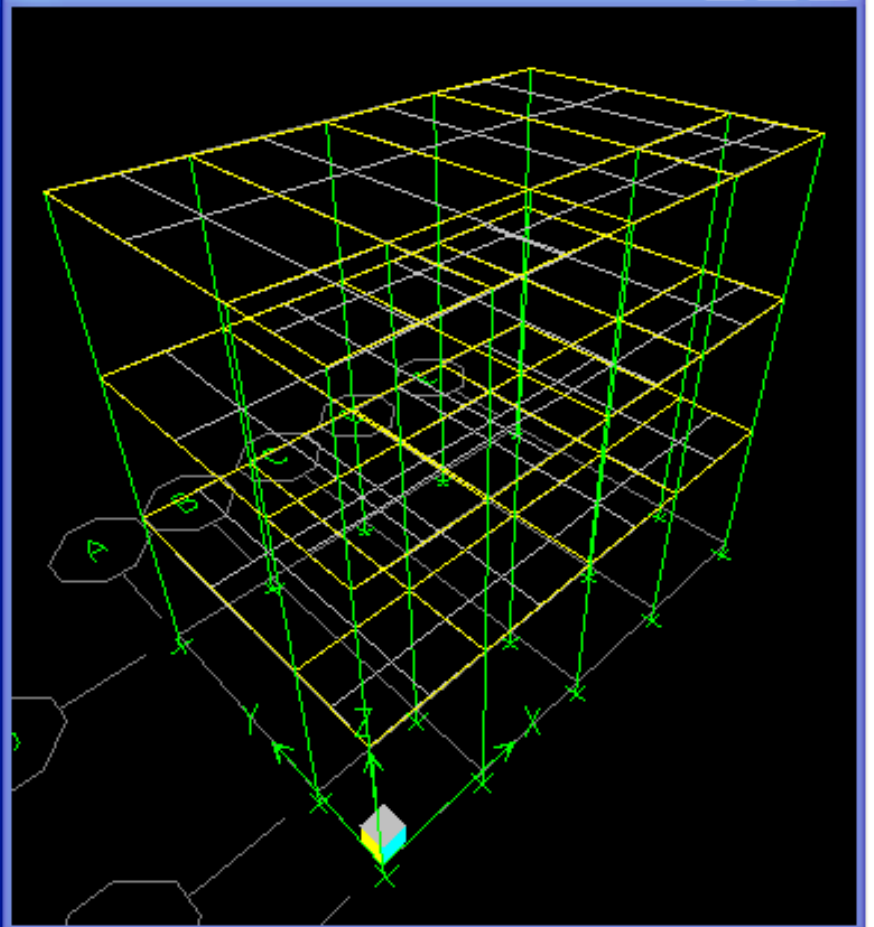




3-D View Frame Span Loads GRAVITY (MA...)

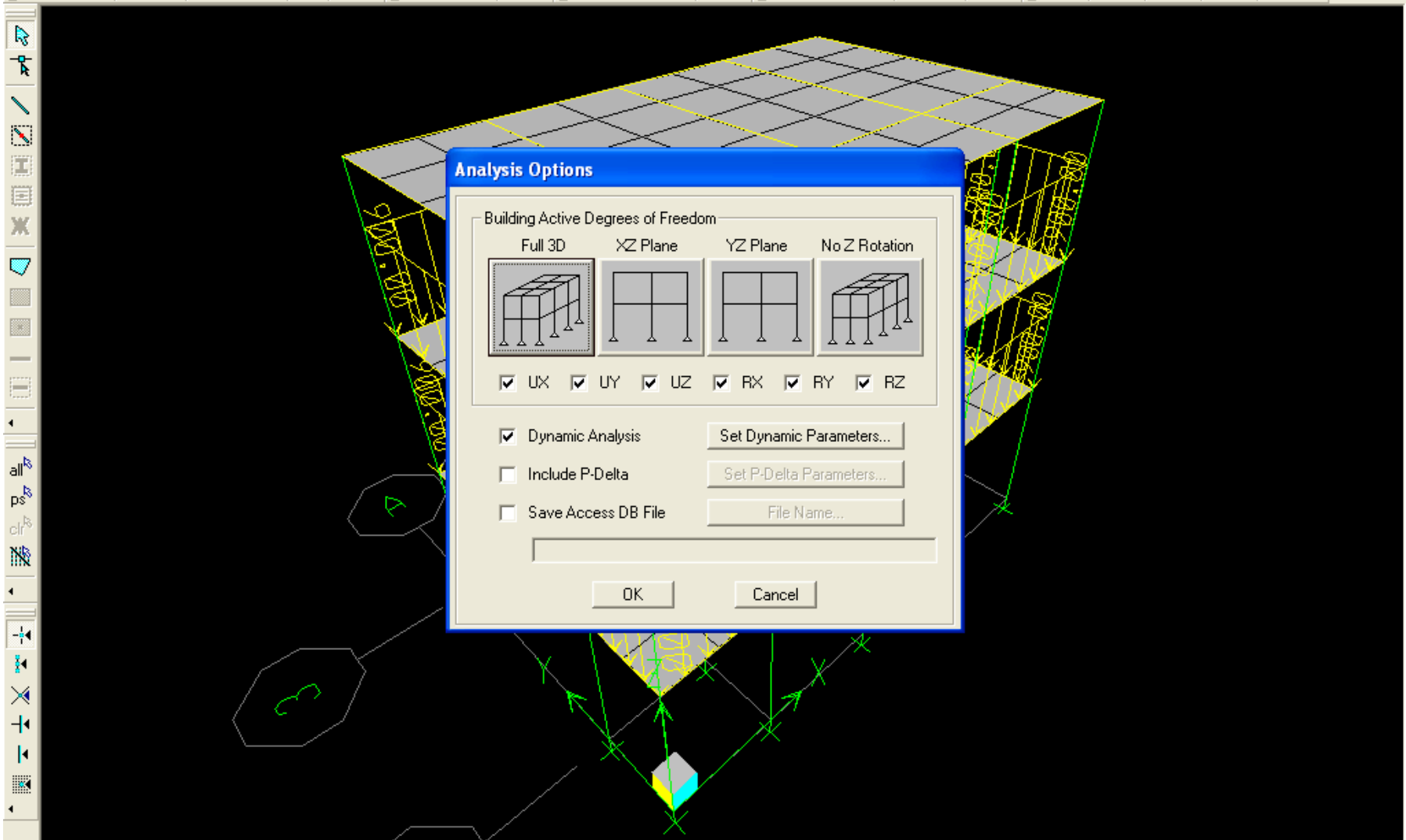
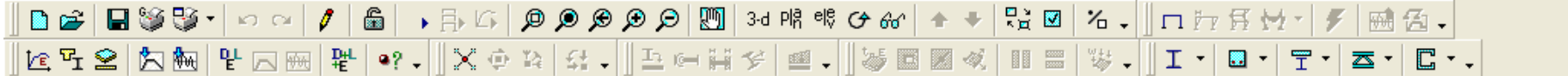


3-D View



3-D View

Inactive GLOBAL lb-ft



Analysis Options

Building Active Degrees of Freedom

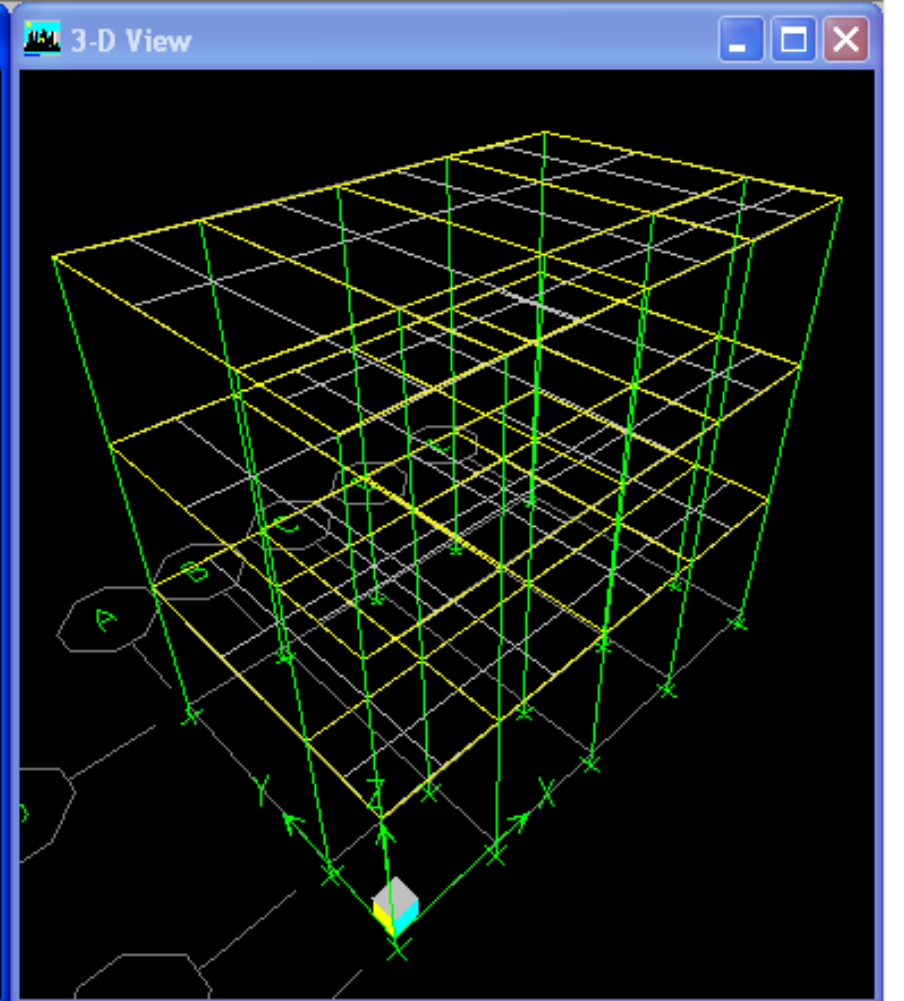
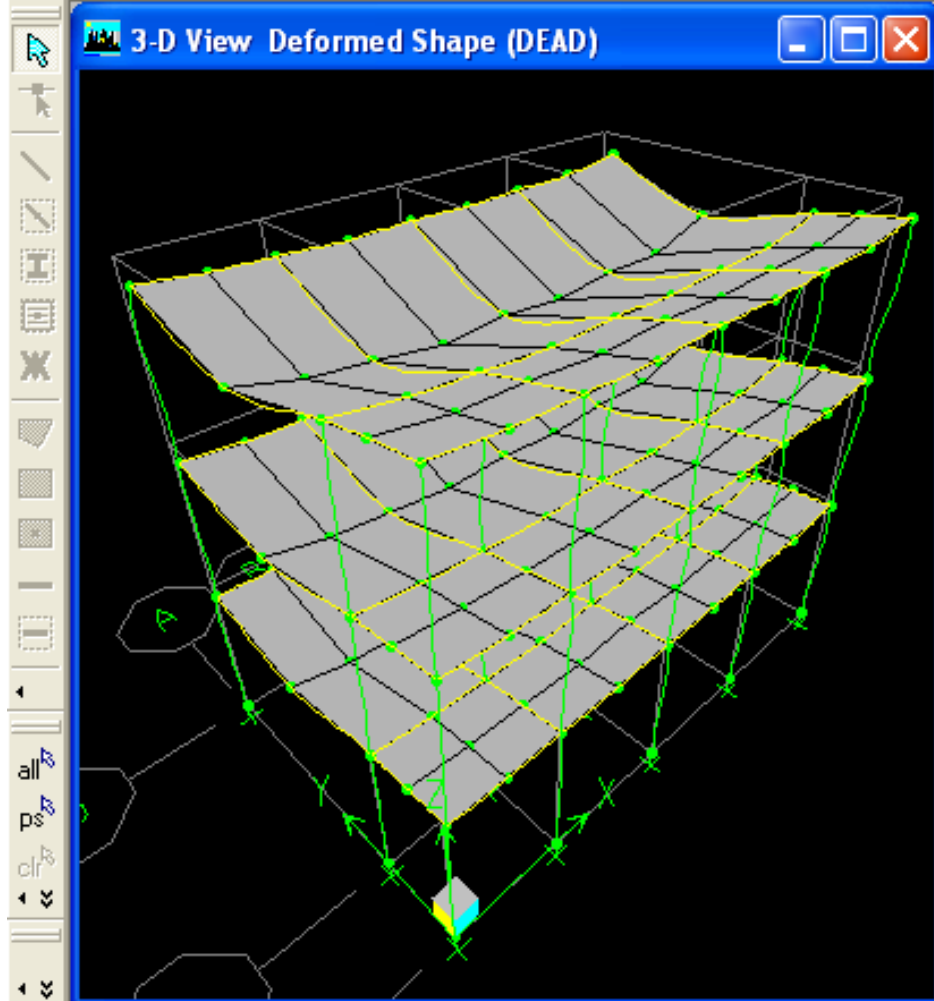
Full 3D	XZ Plane	YZ Plane	No Z Rotation

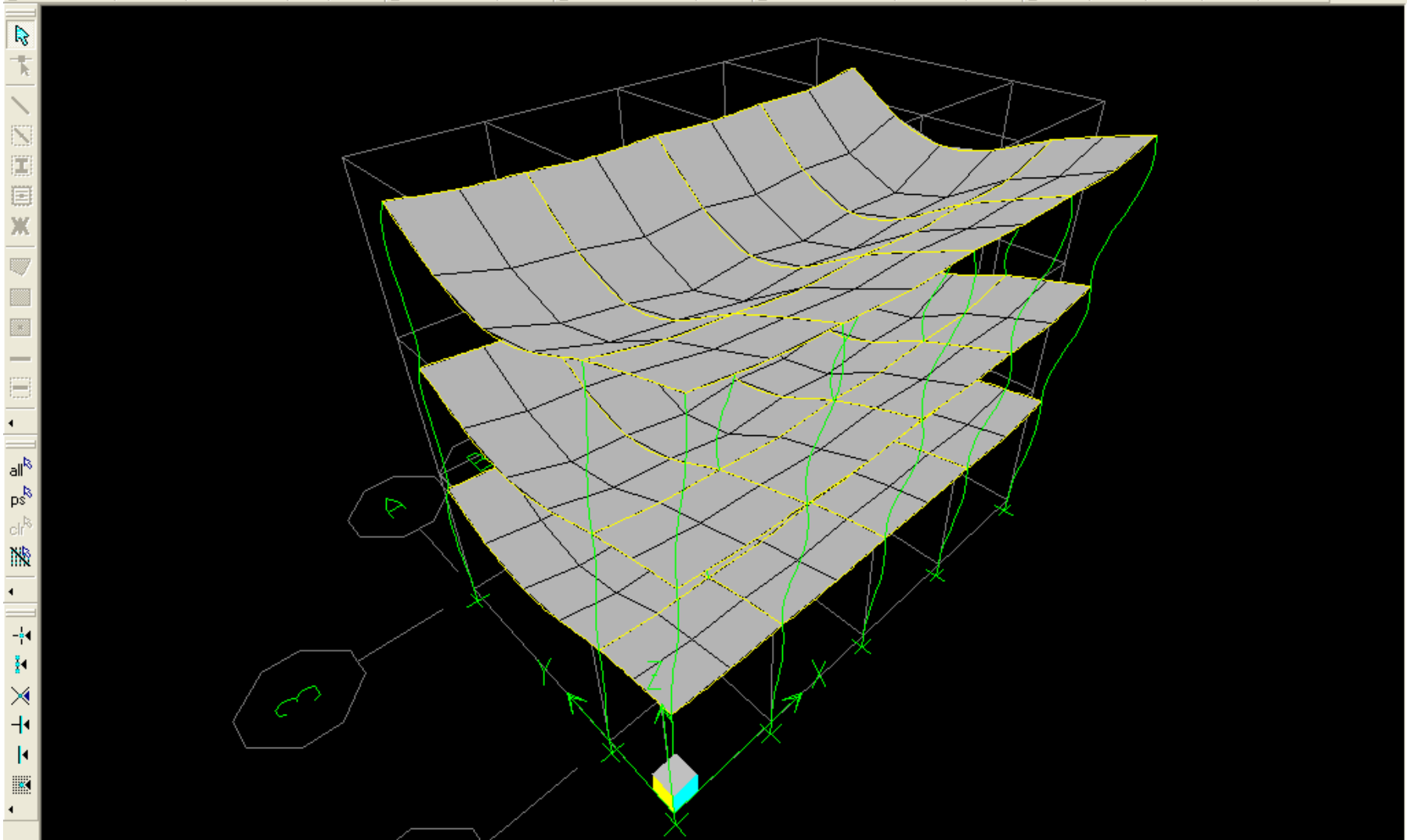
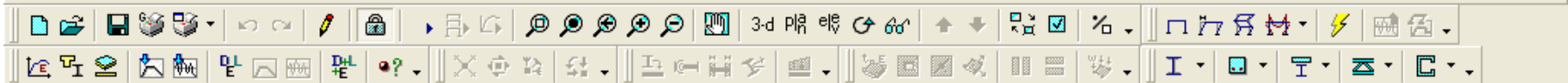
UX UY UZ RX RY RZ

Dynamic Analysis

Include P-Delta

Save Access DB File





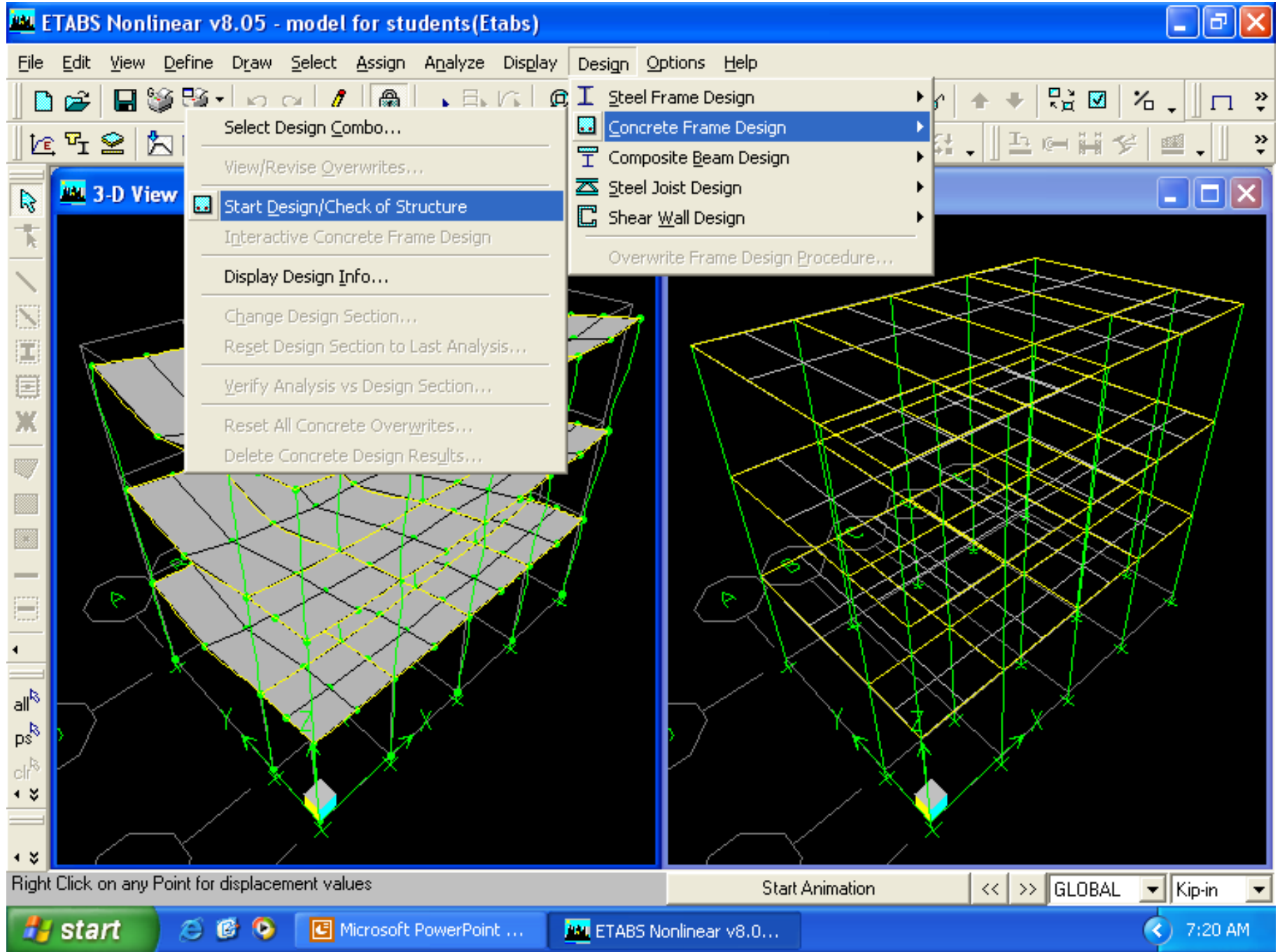
Right Click on any Point for displacement values

Start Animation

<< >>

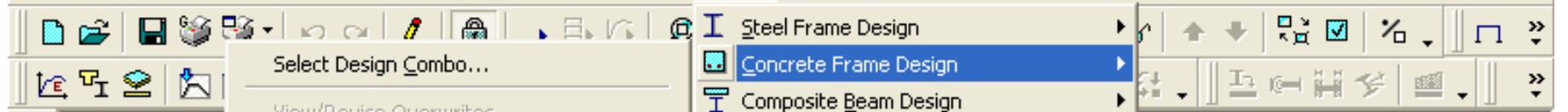
GLOBAL

Kip-in

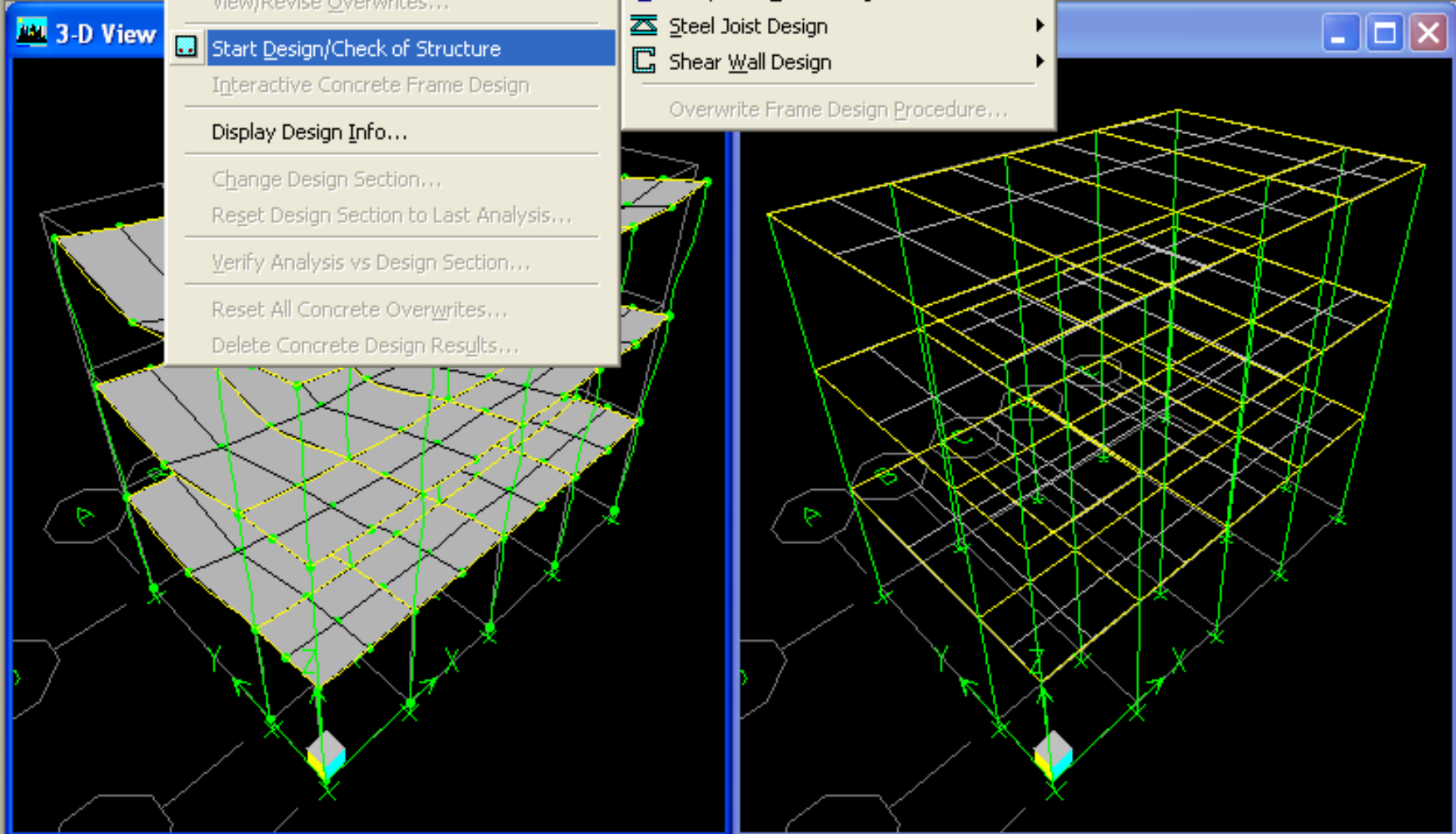


ETABS Nonlinear v8.05 - model for students(Etabs)

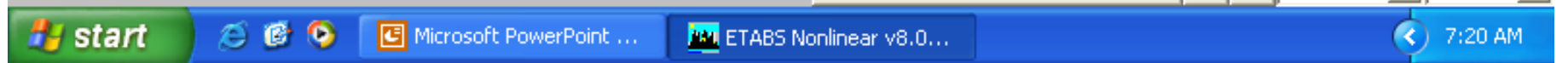
File Edit View Define Draw Select Assign Analyze Display Design Options Help



- Select Design Combo...
 - View/Revise Overwrites...
 - Start Design/Check of Structure
 - Interactive Concrete Frame Design
 - Display Design Info...
 - Change Design Section...
 - Reset Design Section to Last Analysis...
 - Verify Analysis vs Design Section...
 - Reset All Concrete Overwrites...
 - Delete Concrete Design Results...
- Steel Frame Design
 - Concrete Frame Design
 - Composite Beam Design
 - Steel Joist Design
 - Shear Wall Design
 - Overwrite Frame Design Procedure...



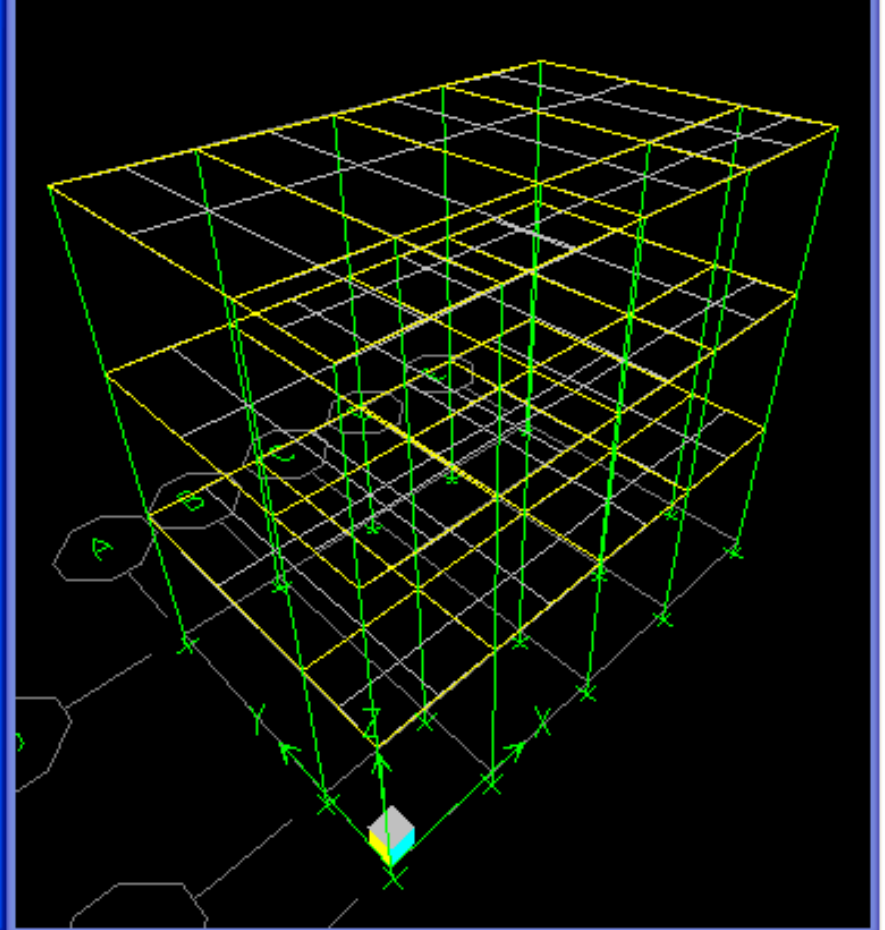
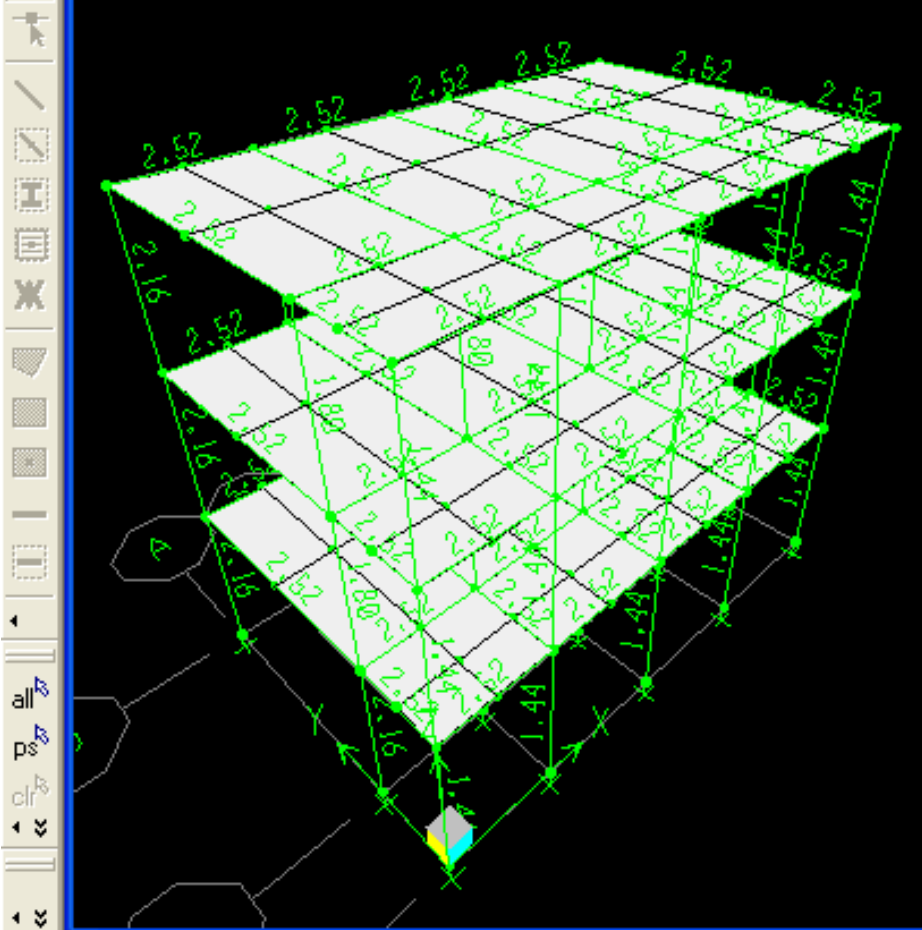
Right Click on any Point for displacement values Start Animation GLOBAL Kip-in





3-D View Longitudinal Reinforcing (ACI 31...

3-D View



- Modelling
- Define materials
- Define sections
- Draw sections
- meshing
- Loads
- Load combinations
- Analysis
- Design