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Work quickly.
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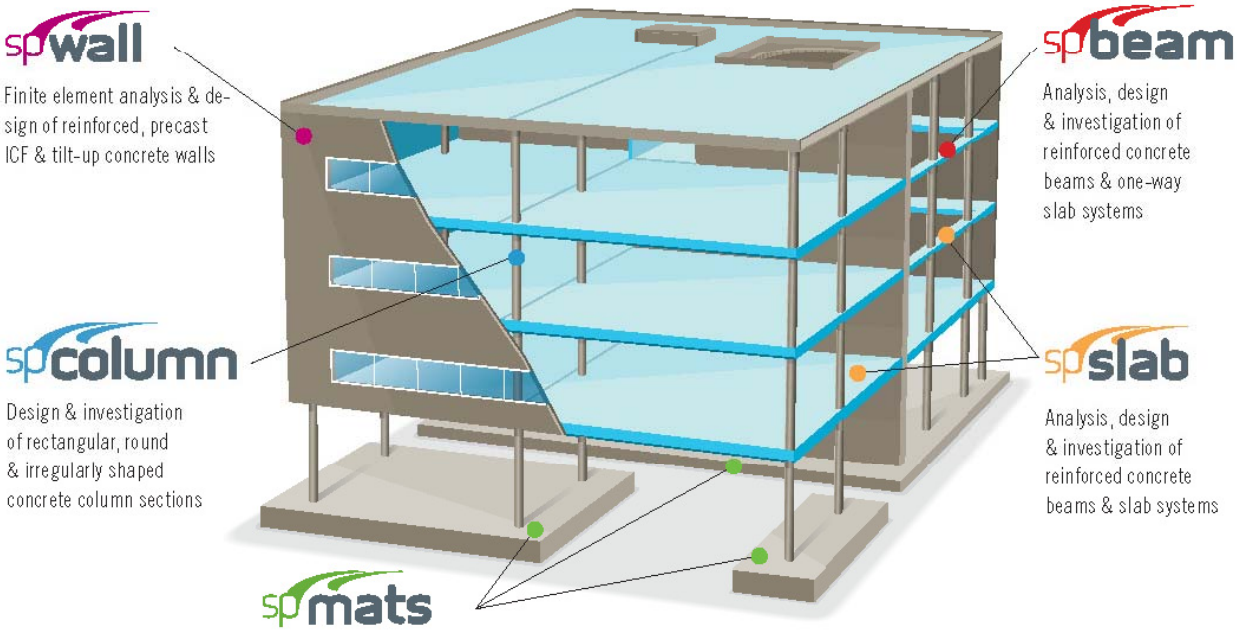


spWall
Finite element analysis & design of reinforced, precast ICF & tilt-up concrete walls

spBeam
Analysis, design & investigation of reinforced concrete beams & one-way slab systems

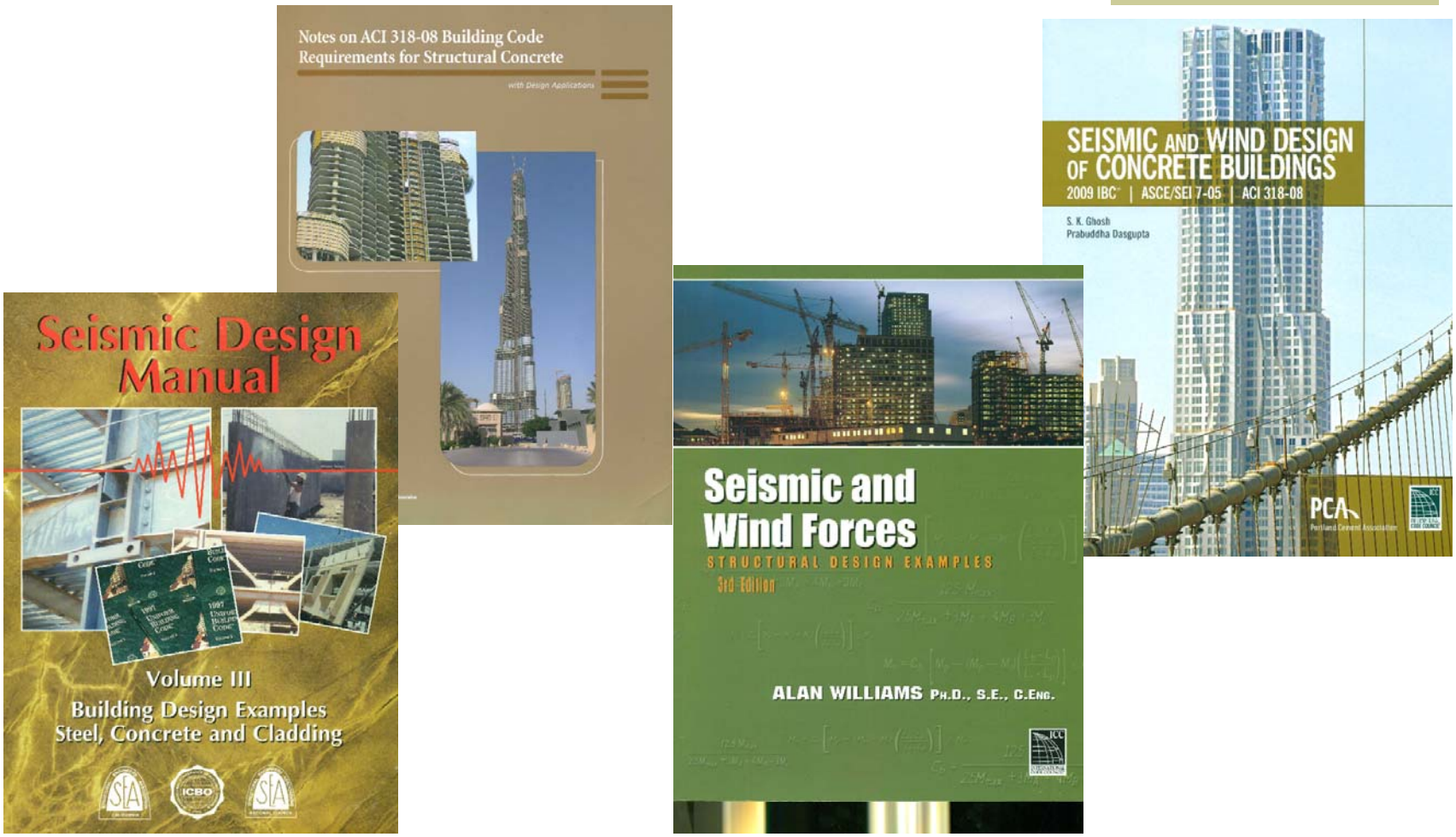
spColumn
Design & investigation of rectangular, round & irregularly shaped concrete column sections

spSlab
Analysis, design & investigation of reinforced concrete beams & slab systems

spMats
Finite element analysis & design of reinforced concrete foundations, combined footings or slabs on grade

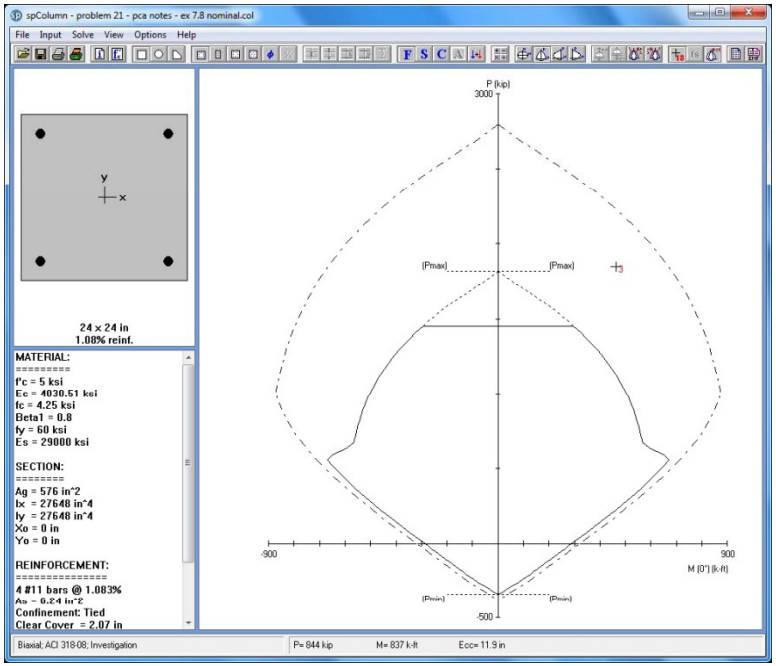
The Industry Standard

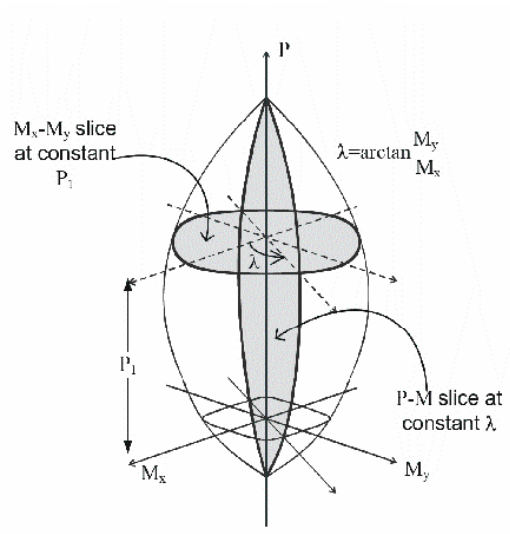
spcolumn

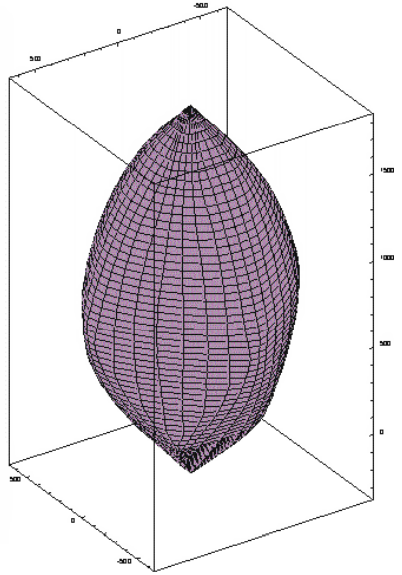


spColumn

- Design and investigation of rectangular, round, or irregular concrete sections including slenderness effects

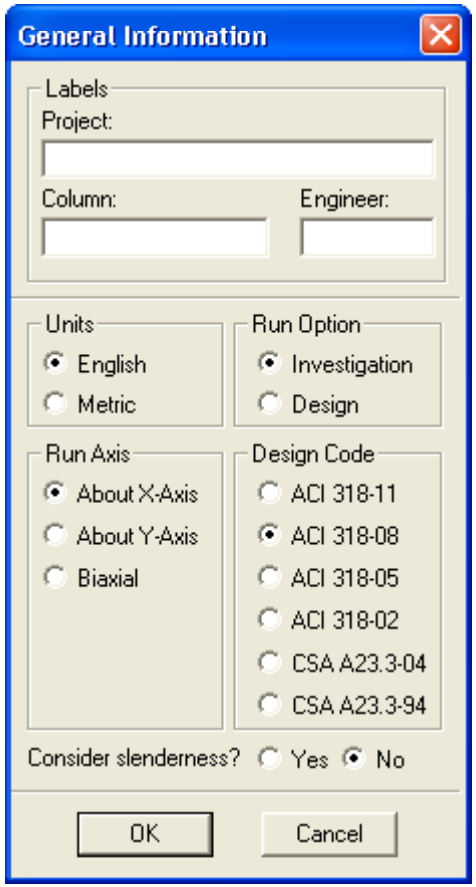


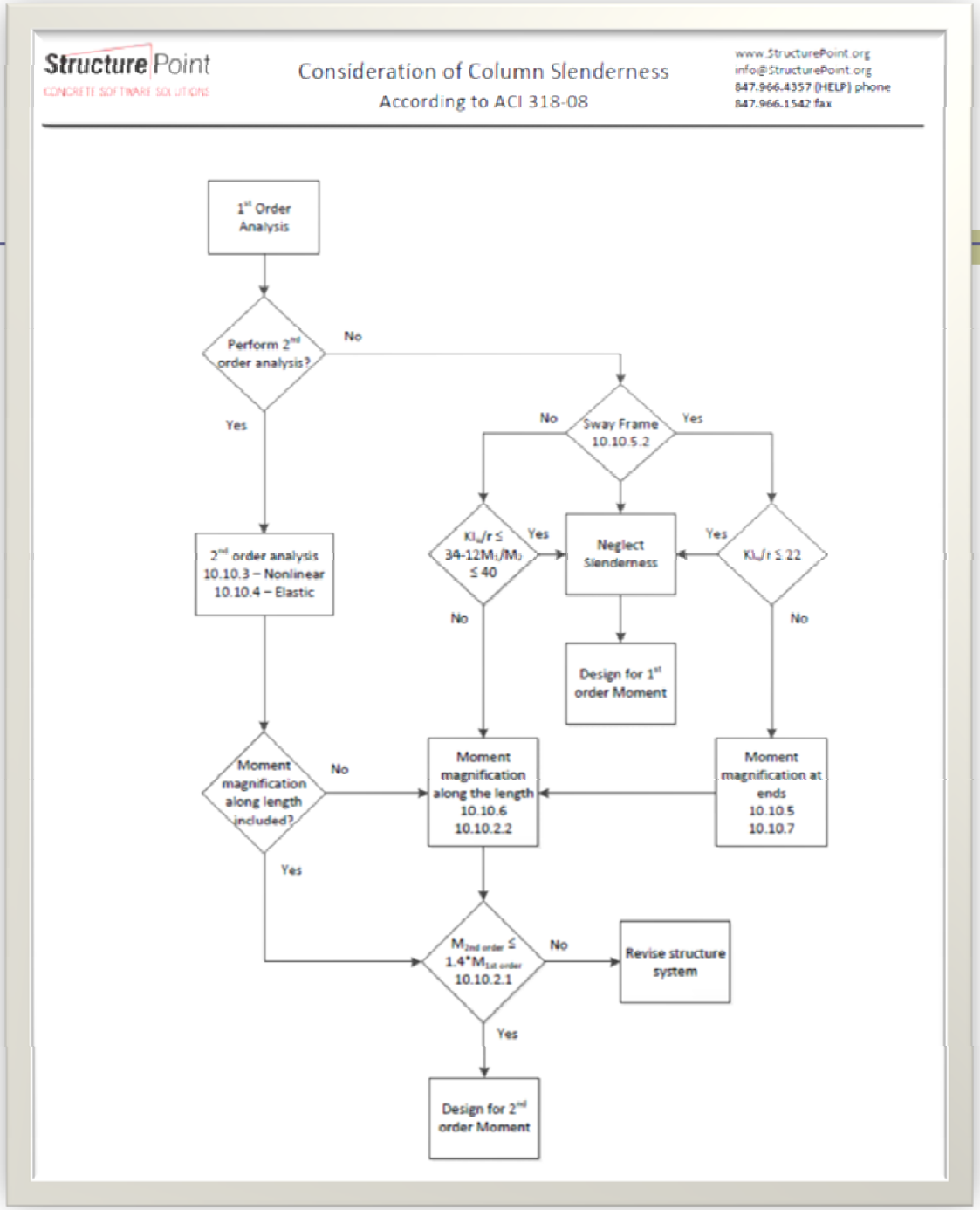




Options

- **Codes:** ACI 318-11/08/05/02
  CSA A23.3-04/94
- **Units:** English or Metric
- **Run Axis:** X, Y or Biaxial
- **Run Options:** Design or Investigation
- **Slenderness**: Yes or No




Structure Point
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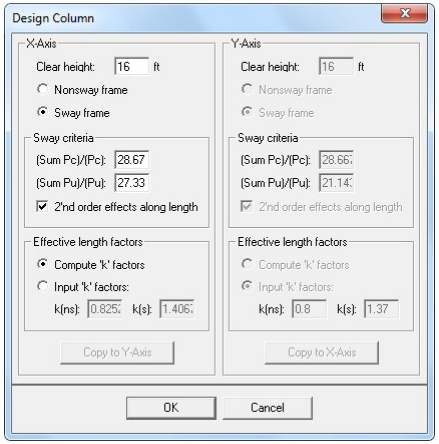
Consideration of Column Slenderness
According to ACI 318-08
www.StructurePoint.org
info@StructurePoint.org
847.966.4357 (HELP) phone
847.966.1542 fax
1st Order Analysis
Perform 2nd order analysis?
No
Yes
Sway Frame 10.10.5.2
No
Yes
2nd order analysis 10.10.3 – Nonlinear 10.10.4 – Elastic
klu/r ≤ 34-12M1/M2 ≤ 40
Yes
Neglect Slenderness
Yes
klu/r ≤ 22
No
No
Design for 1st order Moment
Moment magnification along length included?
No
Moment magnification along the length 10.10.6 10.10.2.2
Moment magnification at ends 10.10.5 10.10.7
Yes
M2nd order ≤ 1.4*M1st order 10.10.2.1
No
Revise structure system
Yes
Design for 2nd order Moment

Slenderness

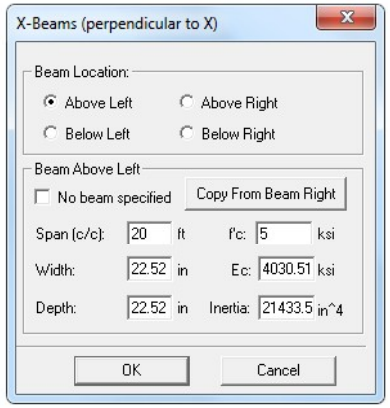
Design Column

Slenderness related to the column being considered



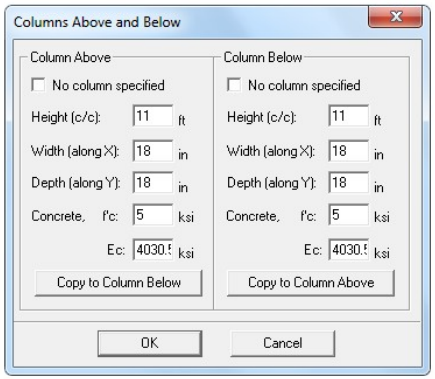
Beams

Slenderness related to beams



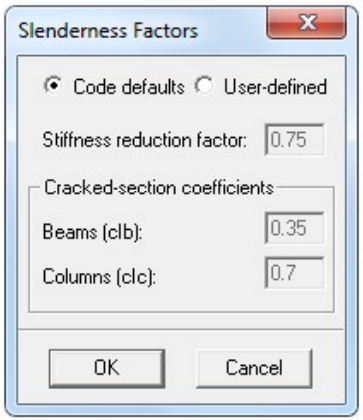
Columns Above and Below

Slenderness related to columns above and below the design column



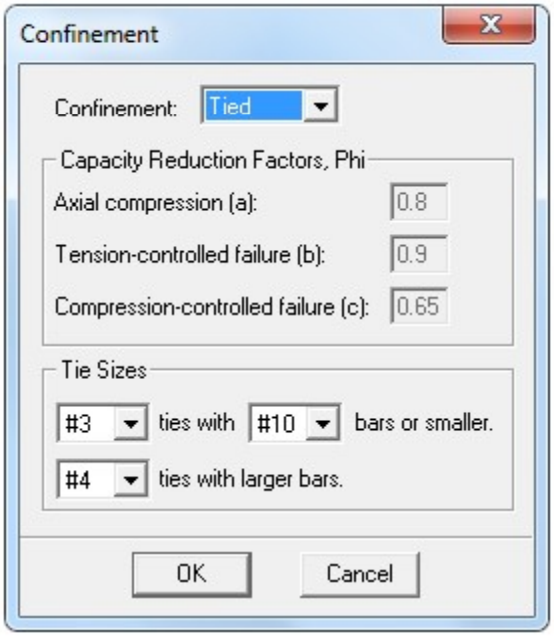
Factors

Factors that affect slenderness calculations

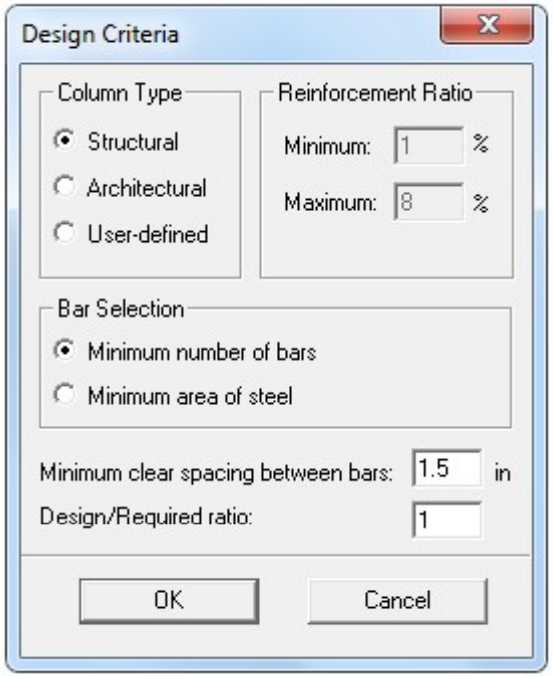


Reinforcement Options

- Confinement



- Design Criteria



Material Properties

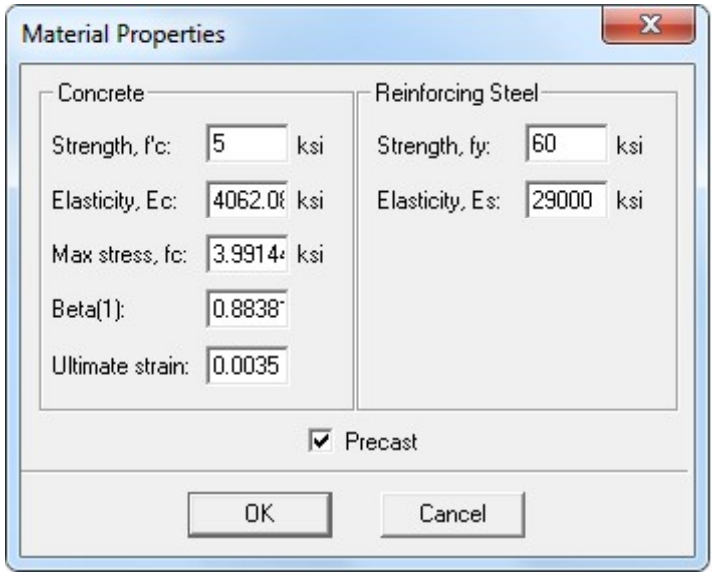
- **Concrete:**

  f'_c, E_c, f_c, β_1, and ε_c

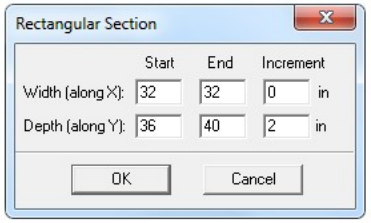
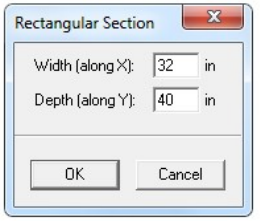
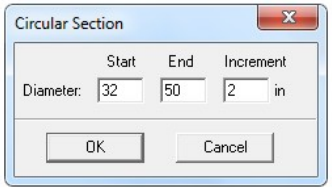
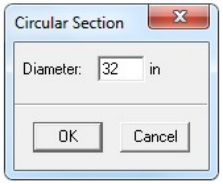
- **Steel:**

  f_y and E_s

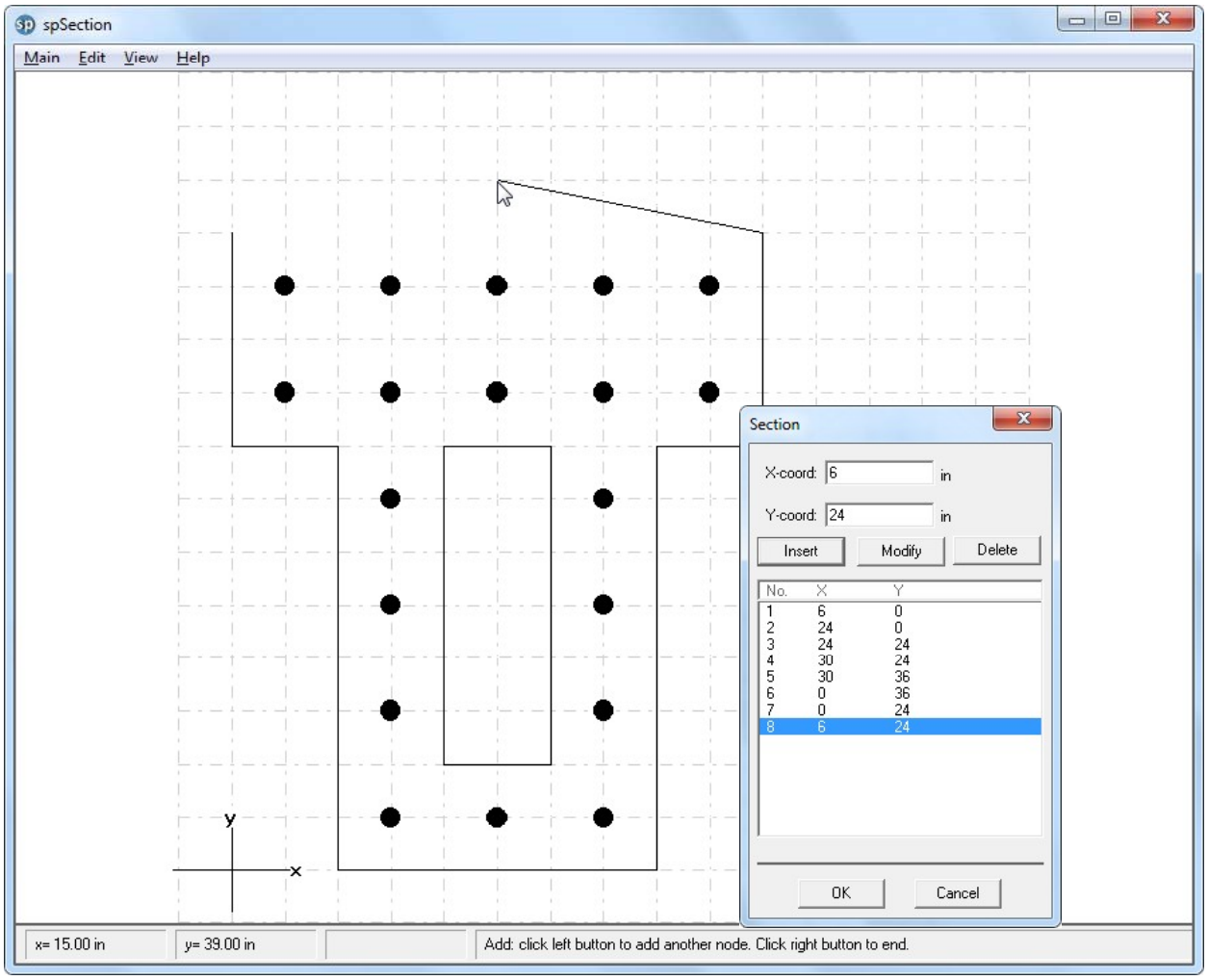
Precast (CSA only)



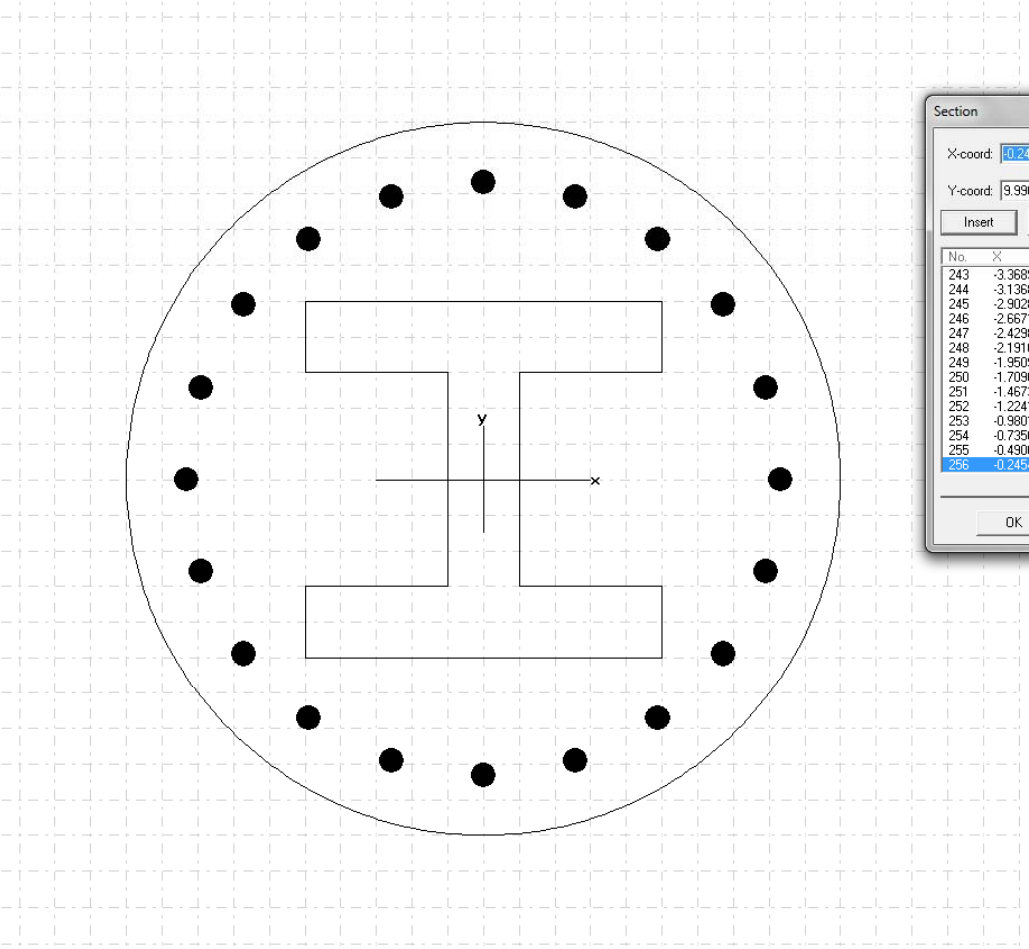
Section

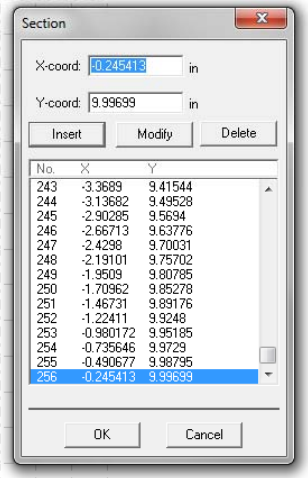
	Design	Investigation
Rectangular:		
Circular:		
Irregular:		• Irregular Section Editor • Import Geometry

Irregular Sections

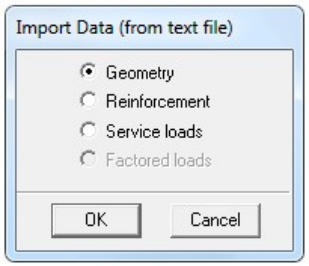


Irregular Sections



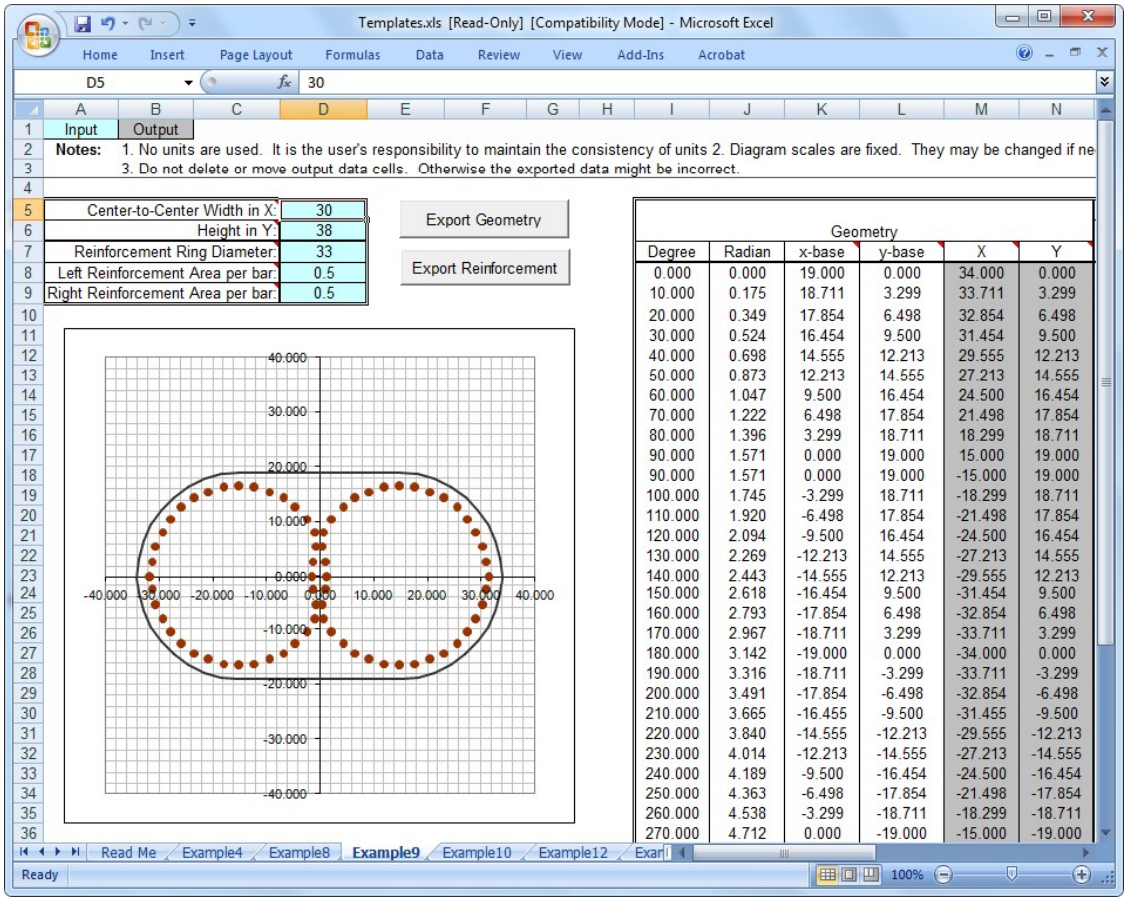


Irregular Sections

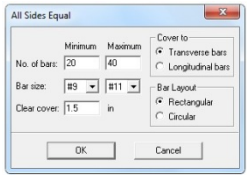
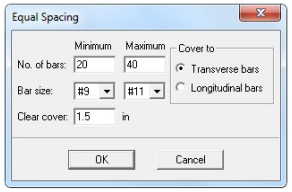
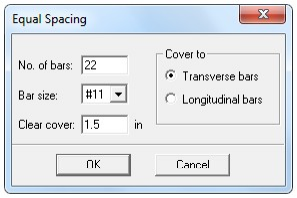
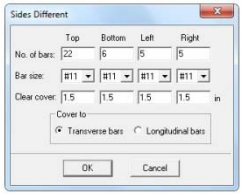
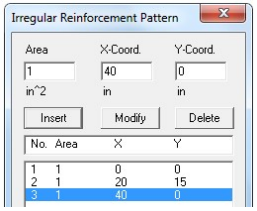


Geometry Data:

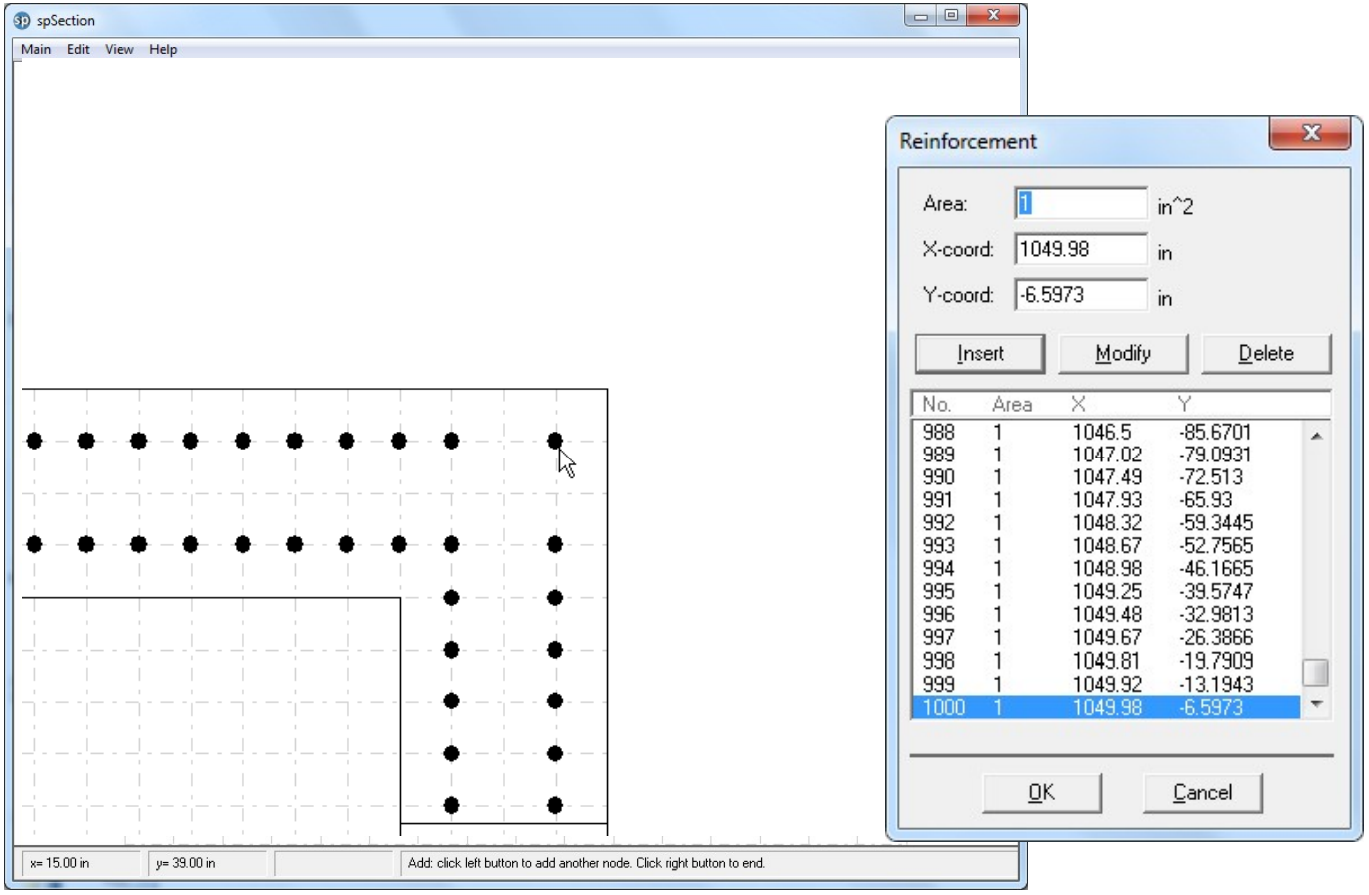
```
No_Of_Section_Nodes
Xs1 Ys1
Xs2 Ys2
.
.
.
Xsn Ysn
No_Of_Opening_Nodes
Xo1 Yo1
Xo2 Yo2
.
.
.
Xon Yon
```



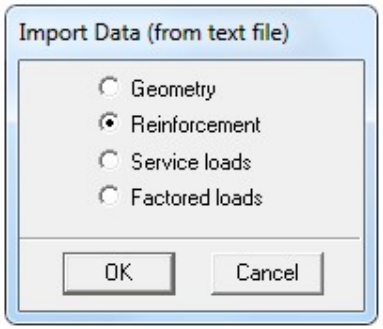
Reinforcement

	Design	Investigation
All Sides Equal:		
Equal Spacing:		
Sides Different:		
Irregular:		

Irregular Reinforcement

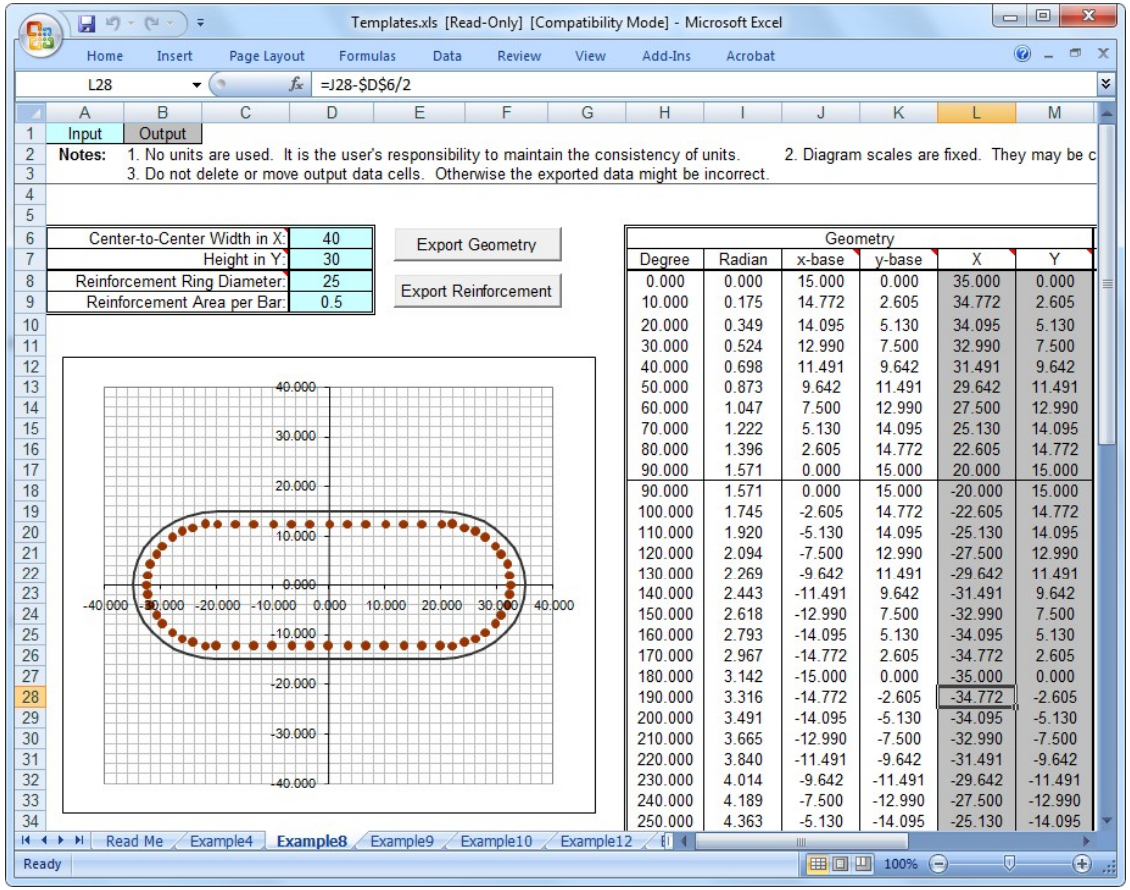


Irregular Reinforcement



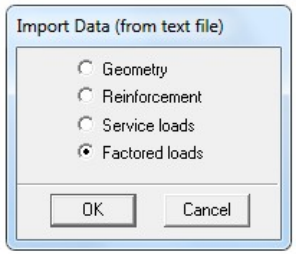
Reinforcement Data:

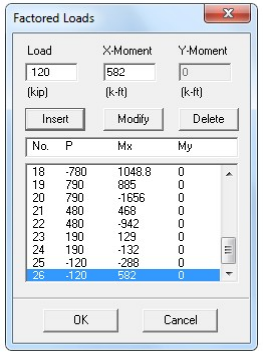
```
No_Of_Bars
A1 X1 Y1
.
.
An Xn Yn
```



Loads

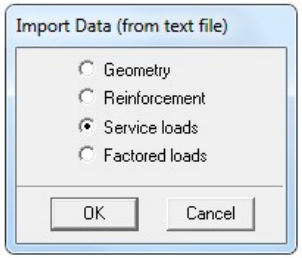
Factored Loads

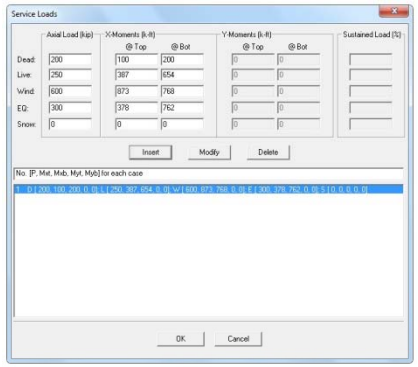




Service Loads

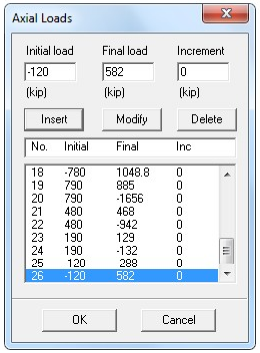
Mandatory for slenderness





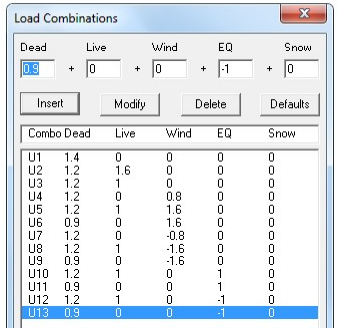
Axial Loads

Uniaxial, short column investigation only



Load Factors

For service loads only

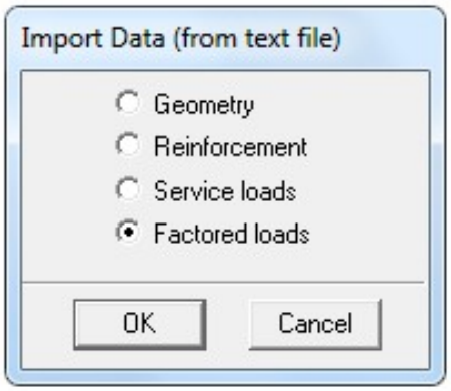


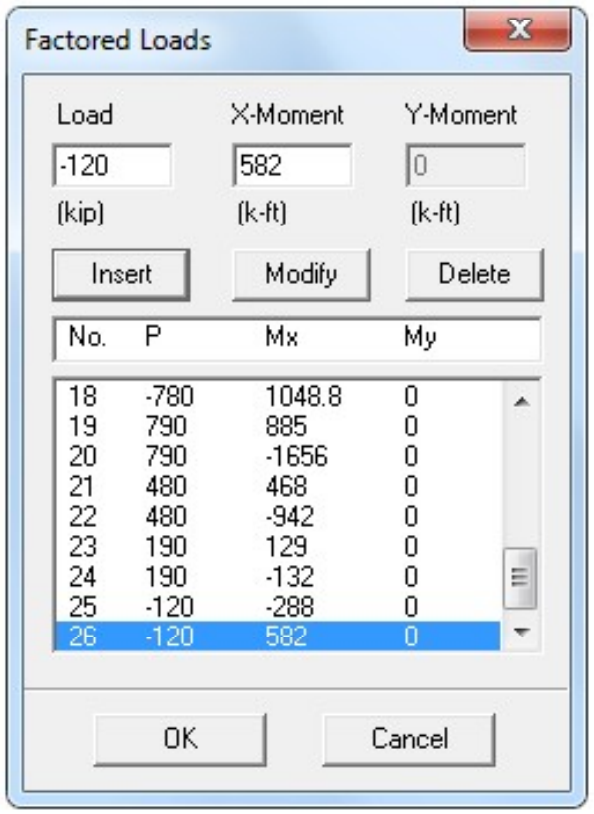
Control Point

Investigation Only

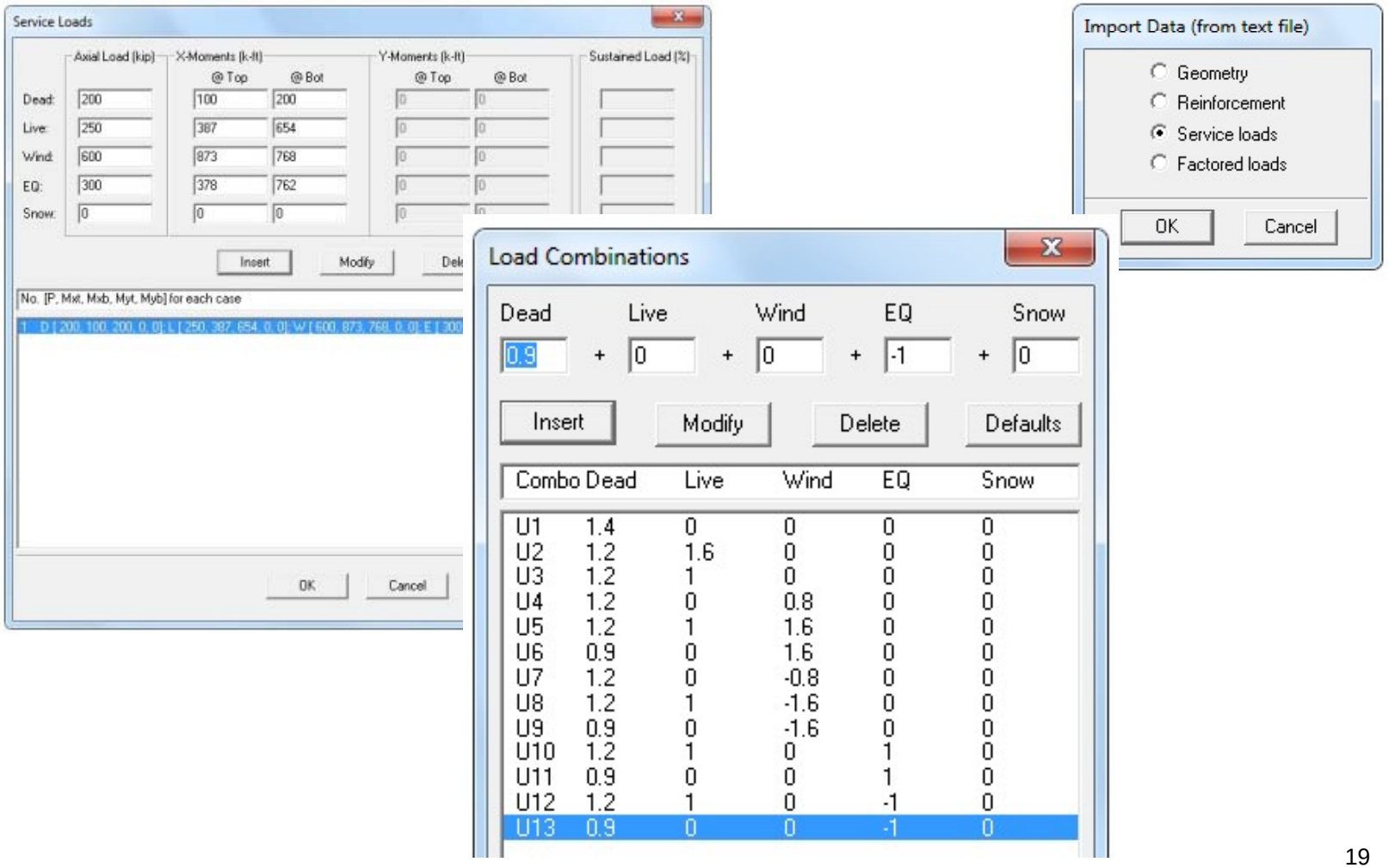
$\phi P_{n,max}/0.85$	$\phi P_{n,max}$	$f_s = 0.0$	$f_s = f_y/2$	$\varepsilon_s = f_y/E_s$	$\varepsilon_s = 0.005$	$P = 0$	$\phi P_{n,min}$
	x						

Factored Loads



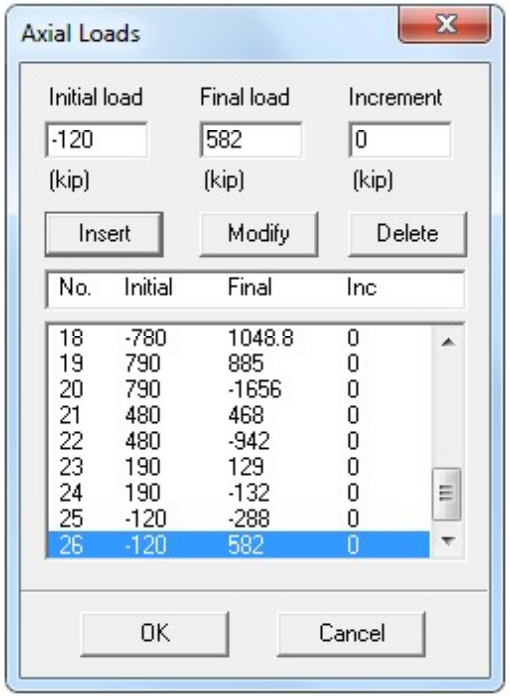


Service Loads



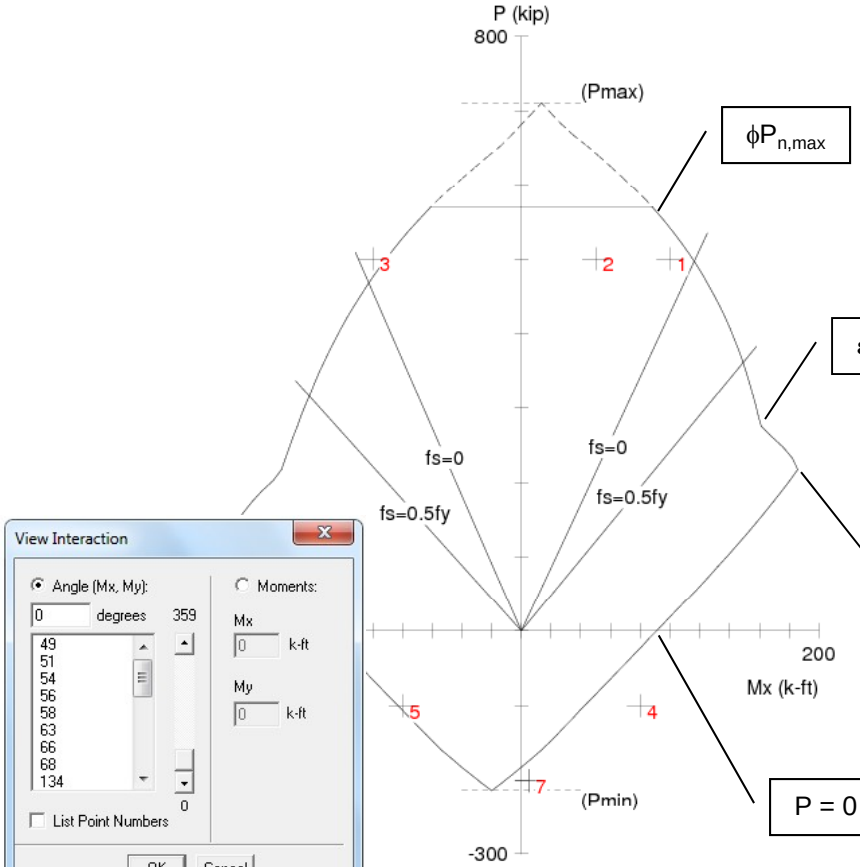
Axial Loads

- For non-slender uniaxial loading only

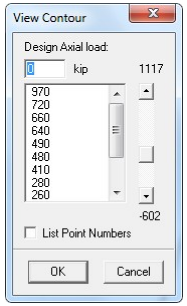


Graphical Results

P-M Diagram

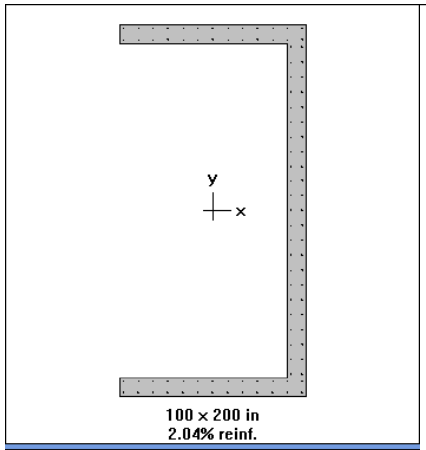


Mx-My Diagram



Graphical Results

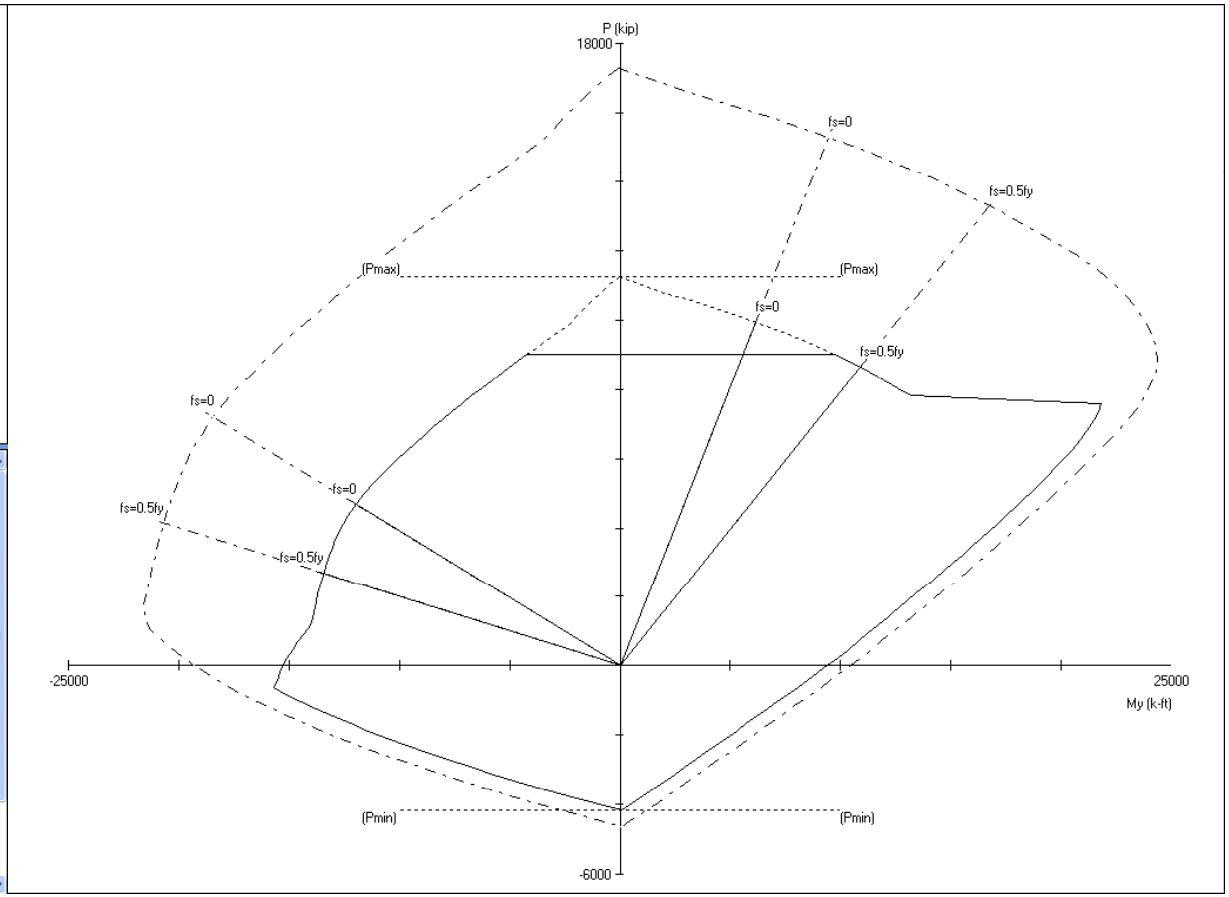
- Nominal Interaction Diagram



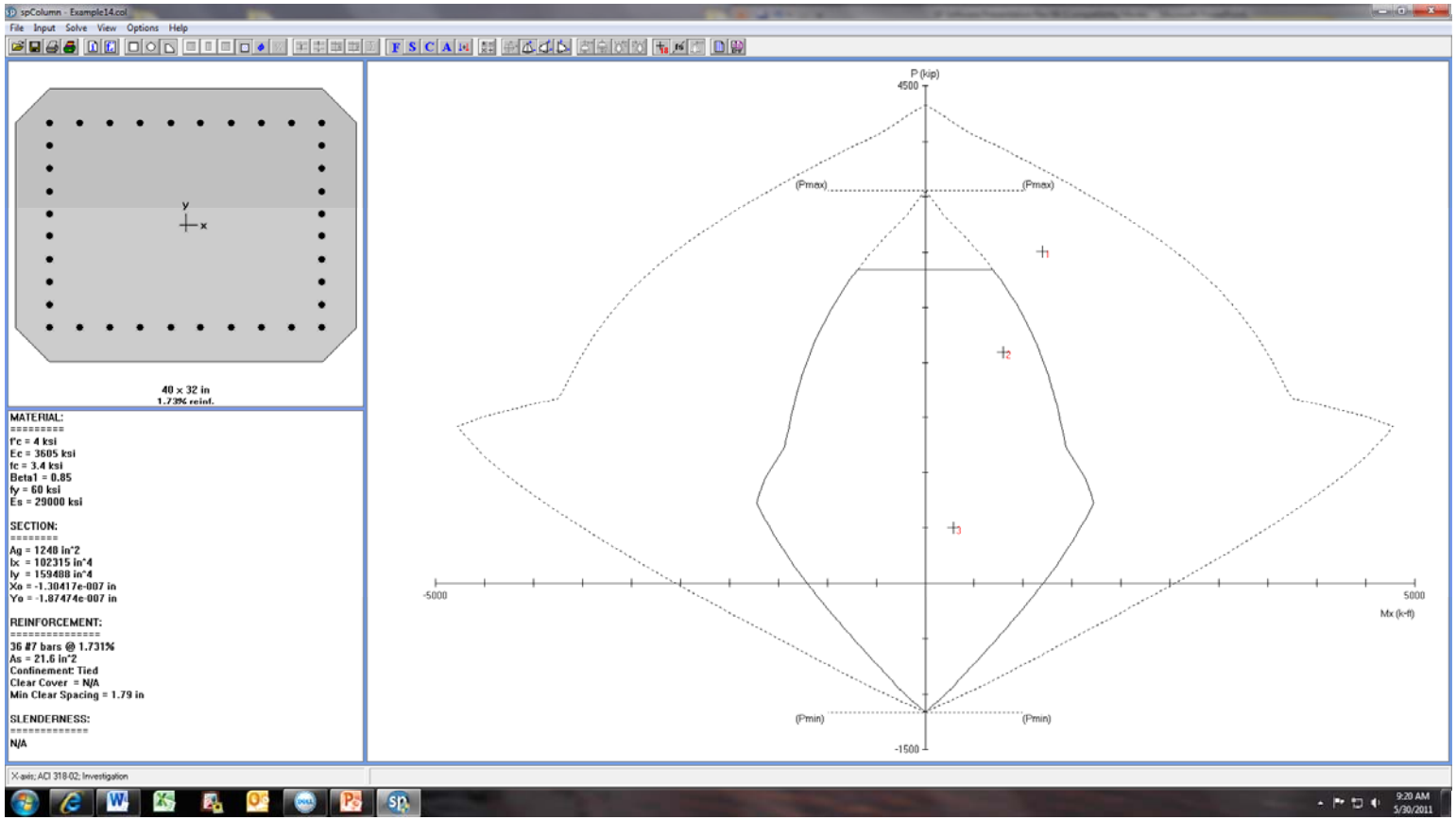
MATERIAL:
=========
f'c = 4 ksi
Ec = 3605 ksi
fc = 3.4 ksi
Beta1 = 0.85
fy = 60 ksi
Es = 29000 ksi

SECTION:
========
Ag = 3800 in^2
Ix = 2.29267e+007 in^4
Iy = 3.60009e+006 in^4
Xo = 21.3158 in
Yo = 0 in

REINFORCEMENT:
==============
98 #8 bars @ 2.037%
As = 77.4201 in^2
Confinement: Tied
Clear Cover = N/A



Superimposing Diagrams



Text Results

Factored Loads and Moments with Corresponding Capacities:

NOTE. Each loading combination includes the following cases:
First line - at column top
Second line - at column bottom

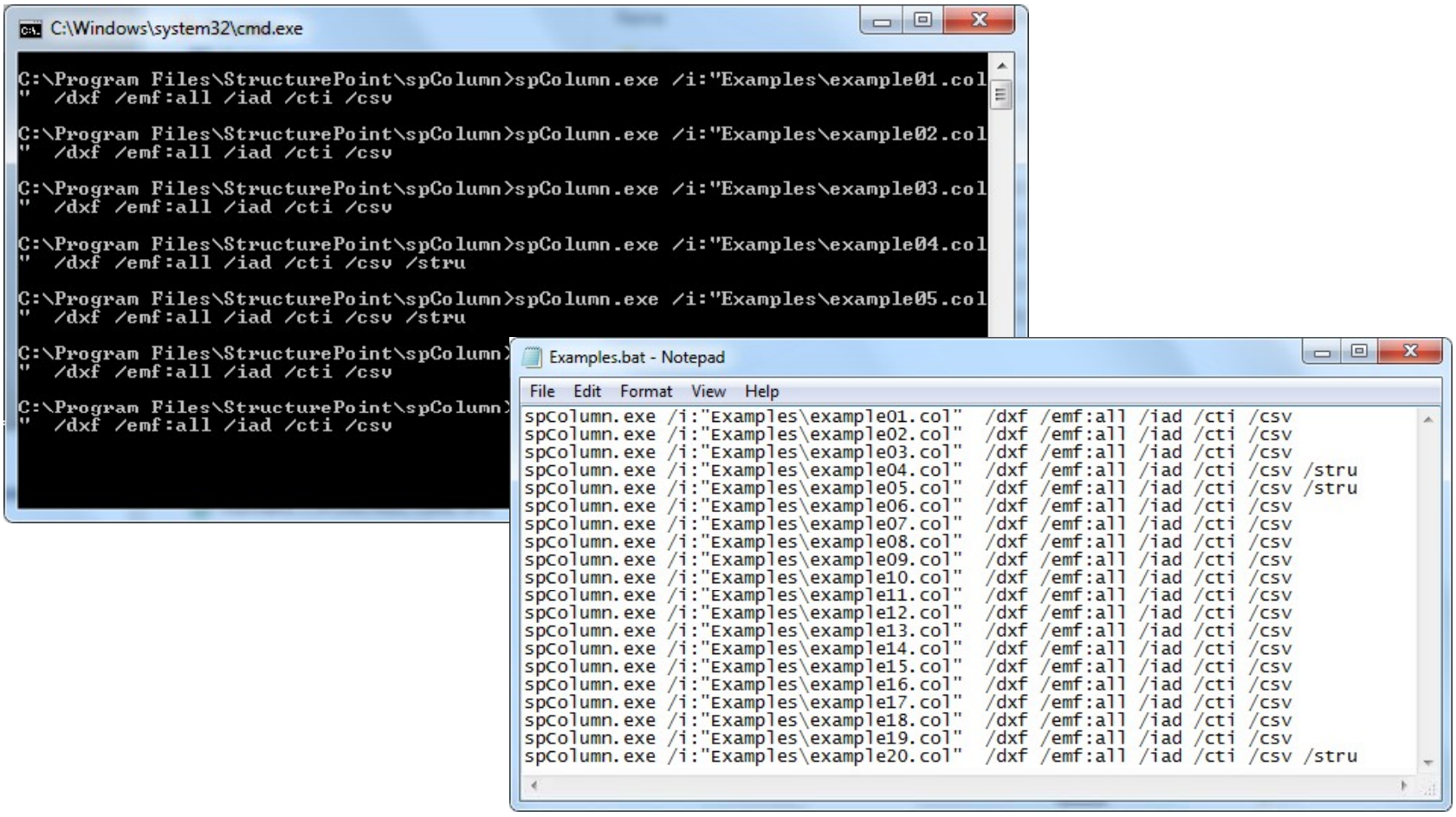
No.	Load Combo	Pu kip	Mux k-ft	Muy k-ft	PhiMnx k-ft	PhiMny k-ft	PhiMn/Mu	NA depth in	Dt depth in	eps_t	Phi	
1	1 U1	280.00	49.00	61.60	244.58	307.47	4.991	11.75	24.43	0.00325	0.751	
2		280.00	-218.40	-47.60	-301.43	-65.70	1.380	14.59	27.22	0.00260	0.695	
3	1 U2	640.00	78.80	124.80	136.96	216.90	1.738	19.64	25.51	0.00090	0.650	
4		640.00	-254.40	-60.00	-236.04	-55.67	0.928	19.64	27.25	0.00116	0.650	#
5	1 U3	490.00	65.00	97.80	162.03	243.79	2.493	16.99	26.14	0.00161	0.650	
6		490.00	-229.20	-52.80	-264.31	-60.89	1.153	17.41	27.21	0.00169	0.650	
7	1 U4	480.00	62.80	122.40	130.13	253.63	2.072	17.13	26.88	0.00171	0.650	
8		480.00	-223.20	-85.60	-260.09	-99.75	1.165	17.25	27.13	0.00172	0.650	
9	1 U5	970.00	106.60	237.00	---------Pu > Pmax----------#							
10		970.00	-301.20	-142.40	---------Pu > Pmax----------#							
11	1 U6	660.00	73.10	178.80	91.75	224.43	1.255	20.32	26.80	0.00096	0.650	
12		660.00	-212.40	-120.20	-215.58	-122.00	1.015	20.12	25.80	0.00085	0.650	
13	1 U7	0.00	21.20	-16.80	306.46	-242.85	14.456	7.18	23.47	0.00683	0.900	
14		0.00	-151.20	4.00	-356.79	9.44	2.360	10.56	27.05	0.00468	0.873	
15	1 U8	10.00	23.40	-41.40	192.49	-340.56	8.226	8.82	25.44	0.00565	0.900	
16		10.00	-157.20	36.80	-356.94	83.56	2.271	10.43	27.09	0.00480	0.883	

17	1 U9	-300.00	-10.10	-99.60	-26.22	-258.59	2.596	6.14	26.94	0.01018	0.900	
18		-300.00	-68.40	59.00	-173.75	149.87	2.540	4.21	23.25	0.01358	0.900	
19	1 U10	720.00	99.00	134.80	136.31	185.60	1.377	20.61	24.06	0.00050	0.650	
20		720.00	-285.20	-117.80	-206.40	-85.25	0.724	21.63	26.38	0.00066	0.650	#
21	1 U11	410.00	65.50	76.60	211.57	247.42	3.230	14.49	24.28	0.00203	0.650	
22		410.00	-196.40	-95.60	-263.84	-128.43	1.343	16.20	26.93	0.00199	0.650	
23	1 U12	260.00	31.00	60.80	158.09	310.06	5.100	13.33	26.59	0.00299	0.729	
24		260.00	-173.20	12.20	-306.78	21.61	1.771	14.31	27.07	0.00267	0.702	
25	1 U13	-50.00	-2.50	2.60	-253.86	264.02	101.545	6.48	23.25	0.00777	0.900	
26		-50.00	-84.40	34.40	-337.08	137.39	3.994	8.80	26.19	0.00595	0.900	

# Section capacity exceeded. Revise column!
Pmax = 893.93 kip

*** End of output ***

Batch Mode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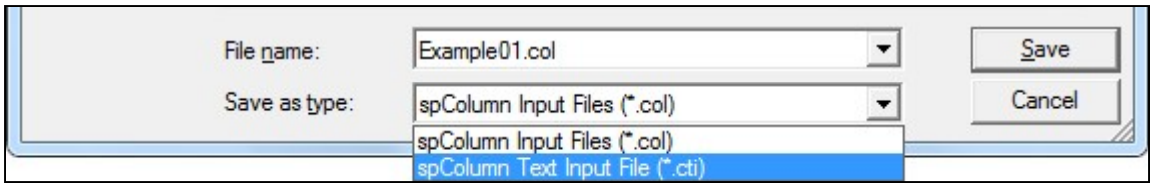
C:\Program Files\StructurePoint\spColumn>spColumn.exe /i:"Examples\example01.col" /dxf /emf:all /iad /cti /csv
C:\Program Files\StructurePoint\spColumn>spColumn.exe /i:"Examples\example02.col" /dxf /emf:all /iad /cti /csv
C:\Program Files\StructurePoint\spColumn>spColumn.exe /i:"Examples\example03.col" /dxf /emf:all /iad /cti /csv
C:\Program Files\StructurePoint\spColumn>spColumn.exe /i:"Examples\example04.col" /dxf /emf:all /iad /cti /csv /stru
C:\Program Files\StructurePoint\spColumn>spColumn.exe /i:"Examples\example05.col" /dxf /emf:all /iad /cti /csv /stru
Examples.bat - Notepad
File Edit Format View Help
spColumn.exe /i:"Examples\example01.col" /dxf /emf:all /iad /cti /csv
spColumn.exe /i:"Examples\example02.col" /dxf /emf:all /iad /cti /csv
spColumn.exe /i:"Examples\example03.col" /dxf /emf:all /iad /cti /csv
spColumn.exe /i:"Examples\example04.col" /dxf /emf:all /iad /cti /csv /stru
spColumn.exe /i:"Examples\example05.col" /dxf /emf:all /iad /cti /csv /stru
spColumn.exe /i:"Examples\example06.col" /dxf /emf:all /iad /cti /csv
spColumn.exe /i:"Examples\example07.col" /dxf /emf:all /iad /cti /csv
spColumn.exe /i:"Examples\example08.col" /dxf /emf:all /iad /cti /csv
spColumn.exe /i:"Examples\example09.col" /dxf /emf:all /iad /cti /csv
spColumn.exe /i:"Examples\example10.col" /dxf /emf:all /iad /cti /csv
spColumn.exe /i:"Examples\example11.col" /dxf /emf:all /iad /cti /csv
spColumn.exe /i:"Examples\example12.col" /dxf /emf:all /iad /cti /csv
spColumn.exe /i:"Examples\example13.col" /dxf /emf:all /iad /cti /csv
spColumn.exe /i:"Examples\example14.col" /dxf /emf:all /iad /cti /csv
spColumn.exe /i:"Examples\example15.col" /dxf /emf:all /iad /cti /csv
spColumn.exe /i:"Examples\example16.col" /dxf /emf:all /iad /cti /csv
spColumn.exe /i:"Examples\example17.col" /dxf /emf:all /iad /cti /csv
spColumn.exe /i:"Examples\example18.col" /dxf /emf:all /iad /cti /csv
spColumn.exe /i:"Examples\example19.col" /dxf /emf:all /iad /cti /csv
spColumn.exe /i:"Examples\example20.col" /dxf /emf:all /iad /cti /csv /stru

CTI Files



example01.cti - Notepad

File Edit Format View Help

```
#spColumn Text Input (CTI) File
[spColumn Version]
4.600
[Project]
spColumn Manual Example 1
[Column ID]
PCANotes 6.4
[Engineer]
SP
[Investigation Run Flag]
15
[Design Run Flag]
9
[Slenderness Flag]
0
[User Options]
0,0,4,0,0,0,0,0,0,0,0,0,2,-1,0,-1,4,2,0,5,0,0,0.000000,0,0,13
[Irregular Options]
-2,0,0,1,0.790000,50.000000,50.000000,-50.000000,-50.000000,0.000000,0.000000,5.000000,5.000000
[Ties]
0,1,7
[Investigation Reinforcement]
4,2,0,0,5,5,5,5,1.500000,1.500000,1.500000,1.500000
[Design Reinforcement]
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```
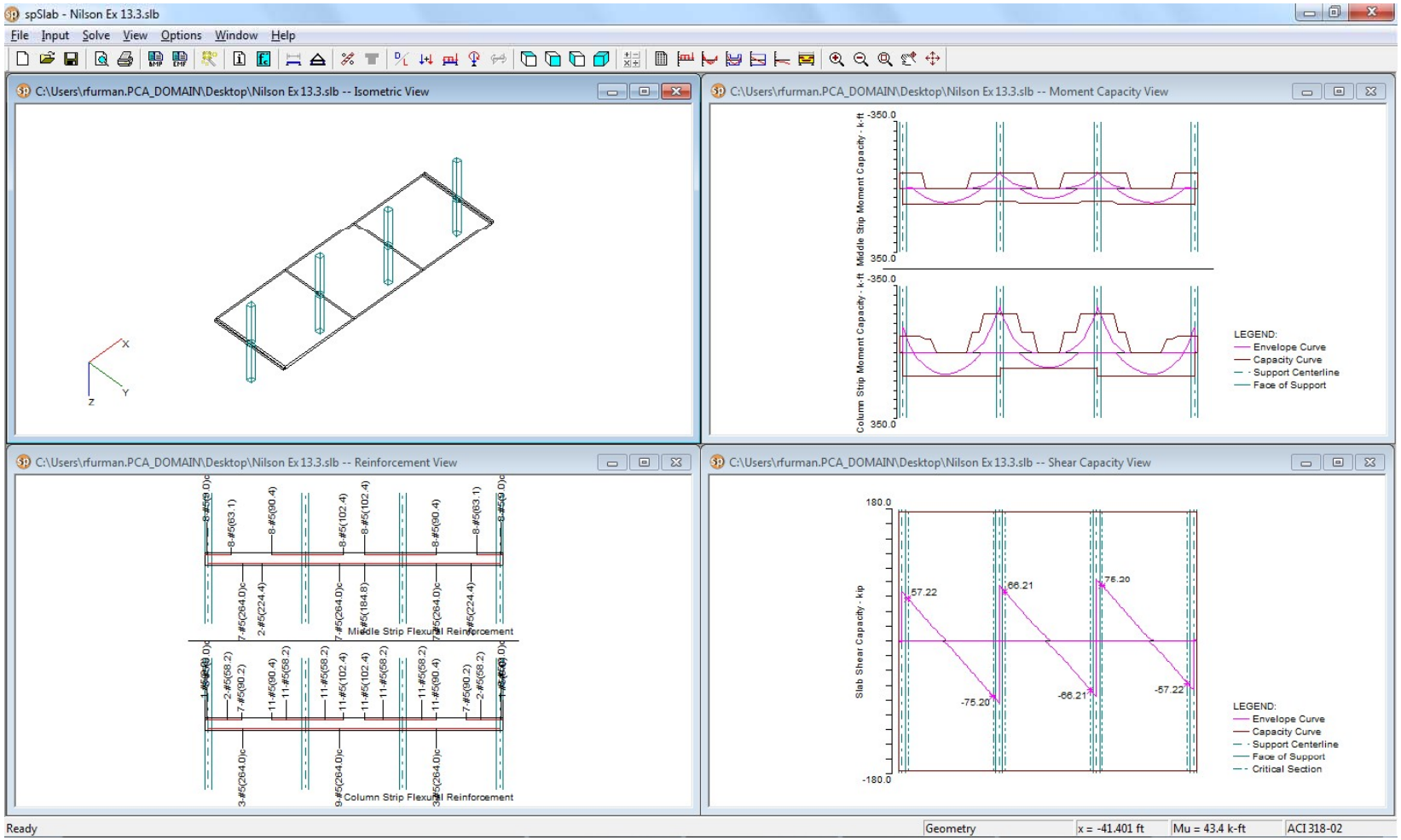
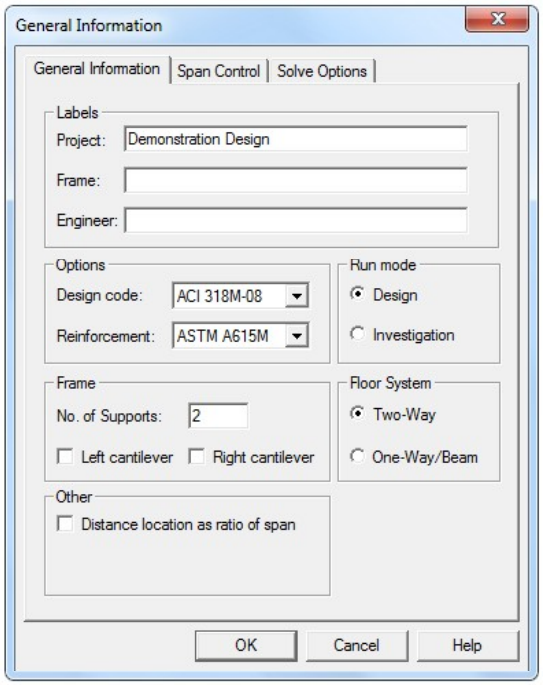
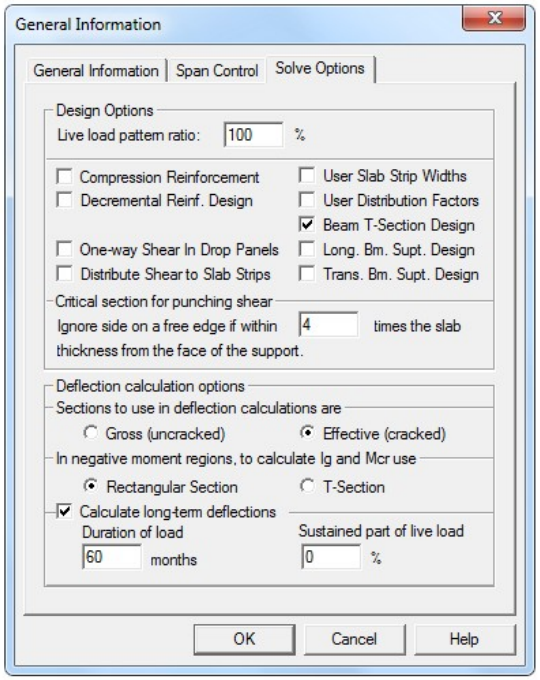


spSlab - Nilson Ex 13.3.slb
File Input Solve View Options Window Help
C:\Users\rfurman.PCA_DOMAIN\Desktop\Nilson Ex 13.3.slb -- Isometric View
C:\Users\rfurman.PCA_DOMAIN\Desktop\Nilson Ex 13.3.slb -- Moment Capacity View
Middle Strip Moment Capacity- k-ft
Column Strip Moment Capacity- k-ft
-350.0
350.0
LEGEND:
Envelope Curve
Capacity Curve
Support Centerline
Face of Support
C:\Users\rfurman.PCA_DOMAIN\Desktop\Nilson Ex 13.3.slb -- Reinforcement View
Middle Strip Flexural Reinforcement
Column Strip Flexural Reinforcement
C:\Users\rfurman.PCA_DOMAIN\Desktop\Nilson Ex 13.3.slb -- Shear Capacity View
Slab Shear Capacity- kip
180.0
-180.0
57.22
66.21
76.20
-75.20
-66.21
-57.22
LEGEND:
Envelope Curve
Capacity Curve
Support Centerline
Face of Support
Critical Section
Ready
Geometry
x = -41.401 ft
Mu = 43.4 k-ft
ACI 318-02

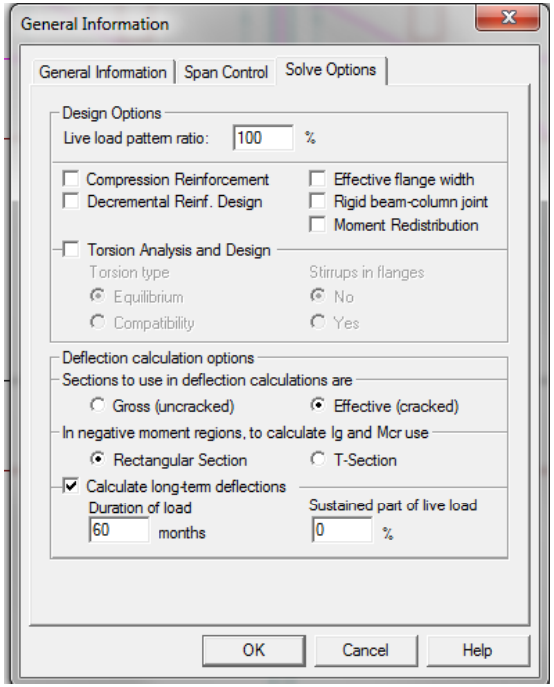
Options



Two-way systems

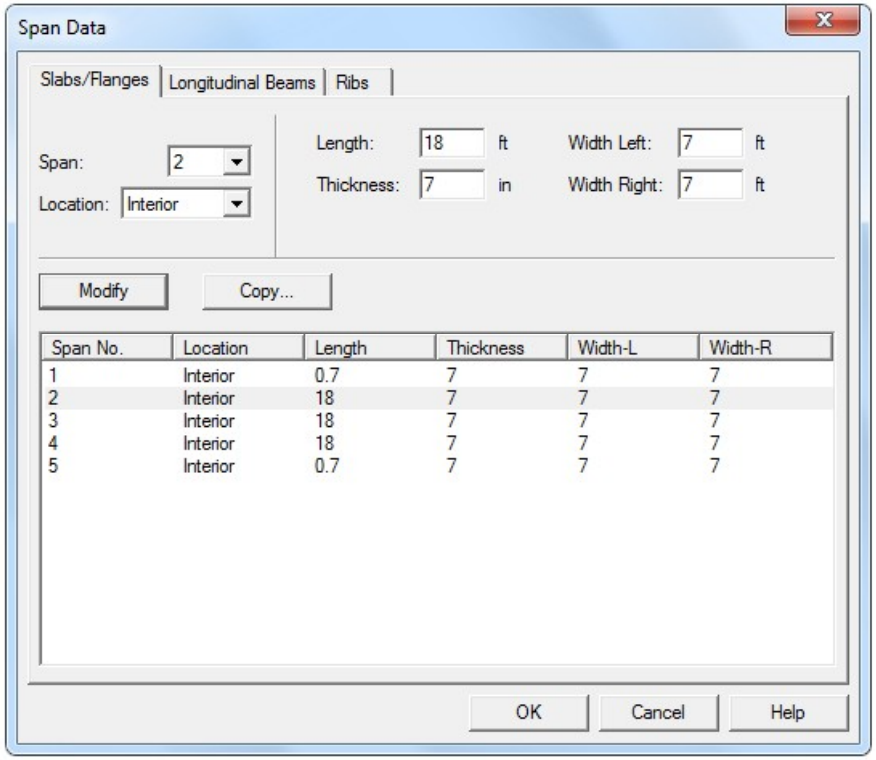


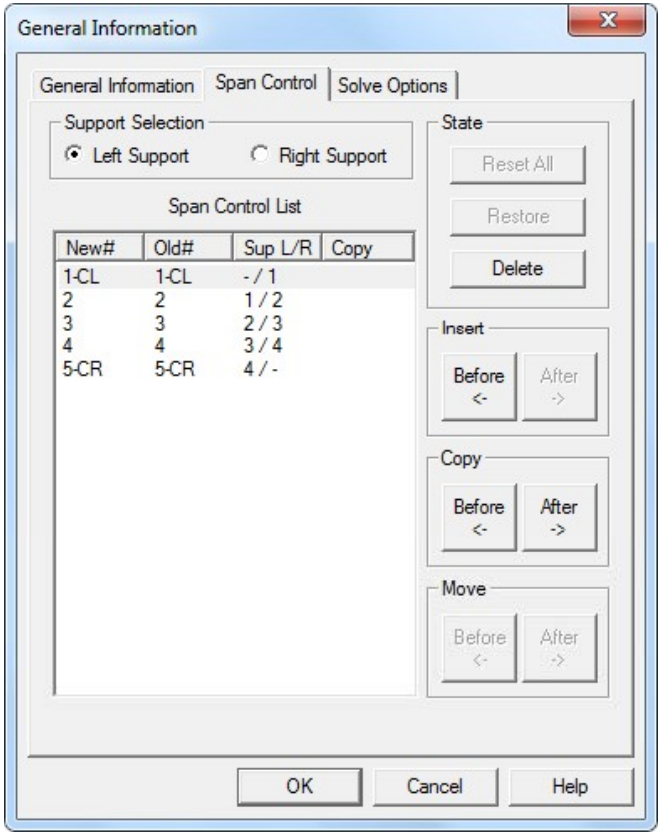
One-way systems



Span Data

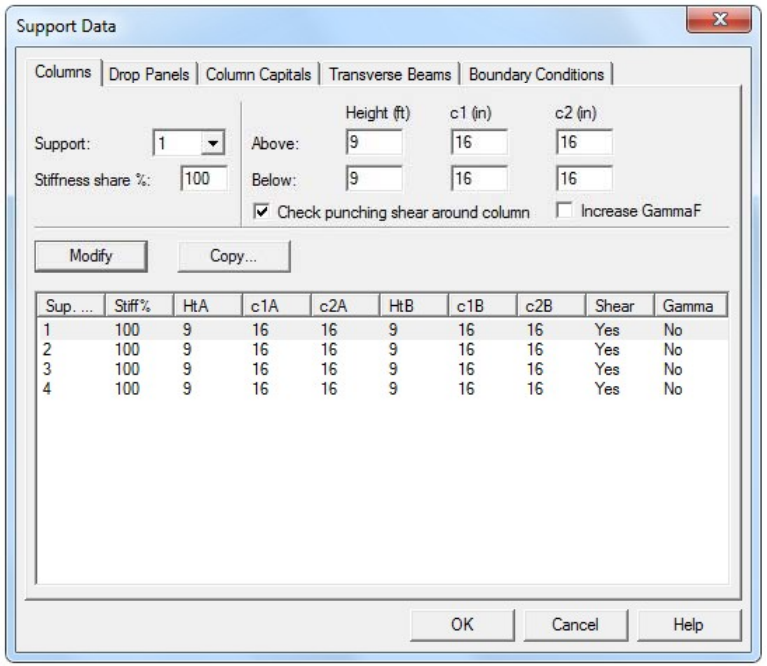
- Defining Spans
- Span Manipulation

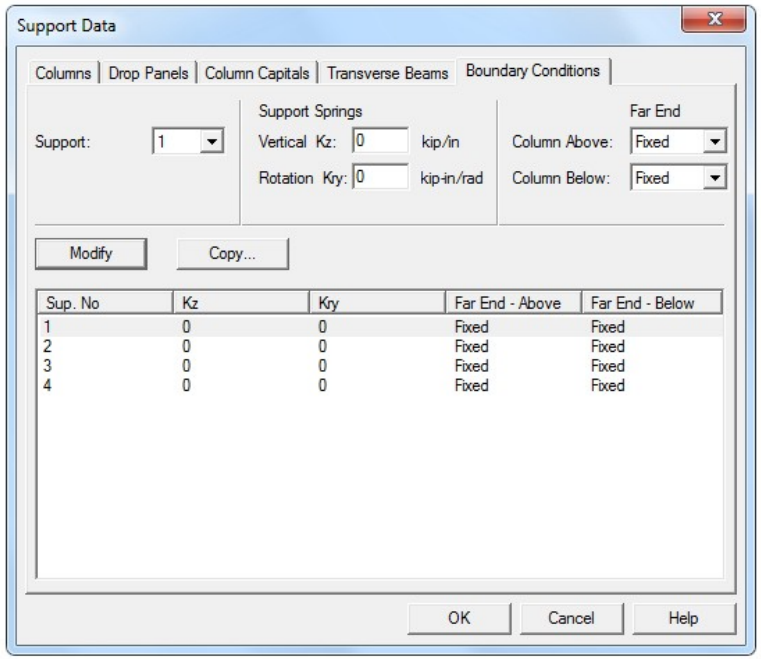




Support Data

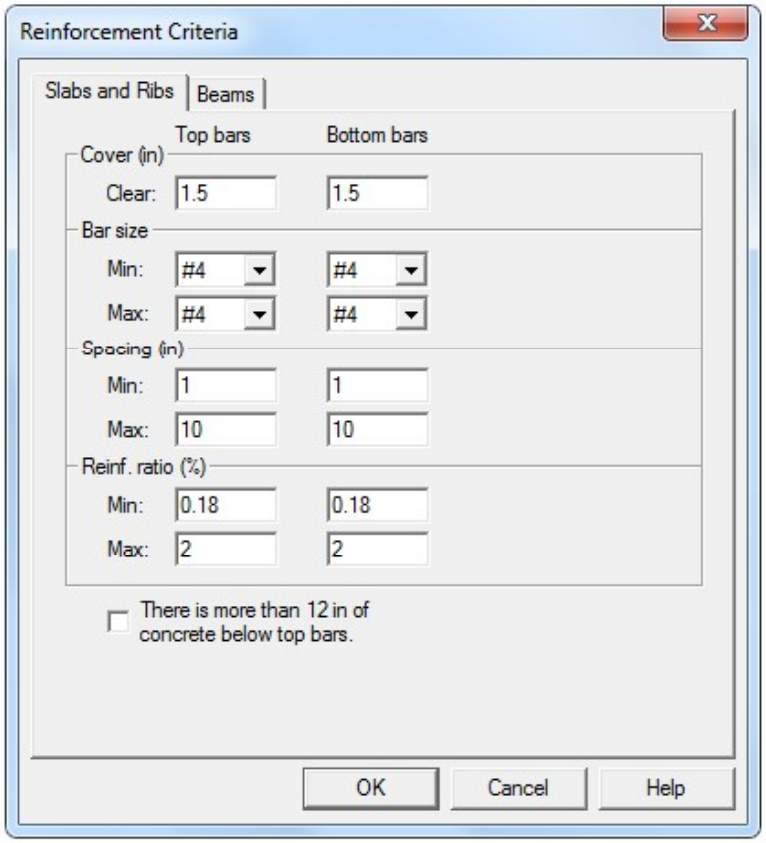
- Defining Supports
- Boundary Conditions



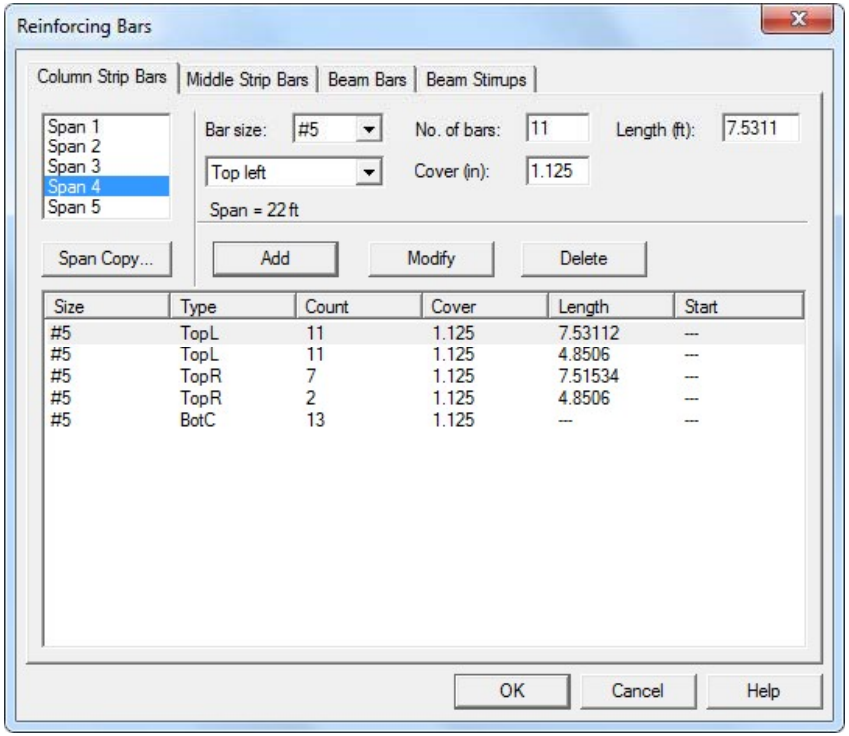


Reinforcement

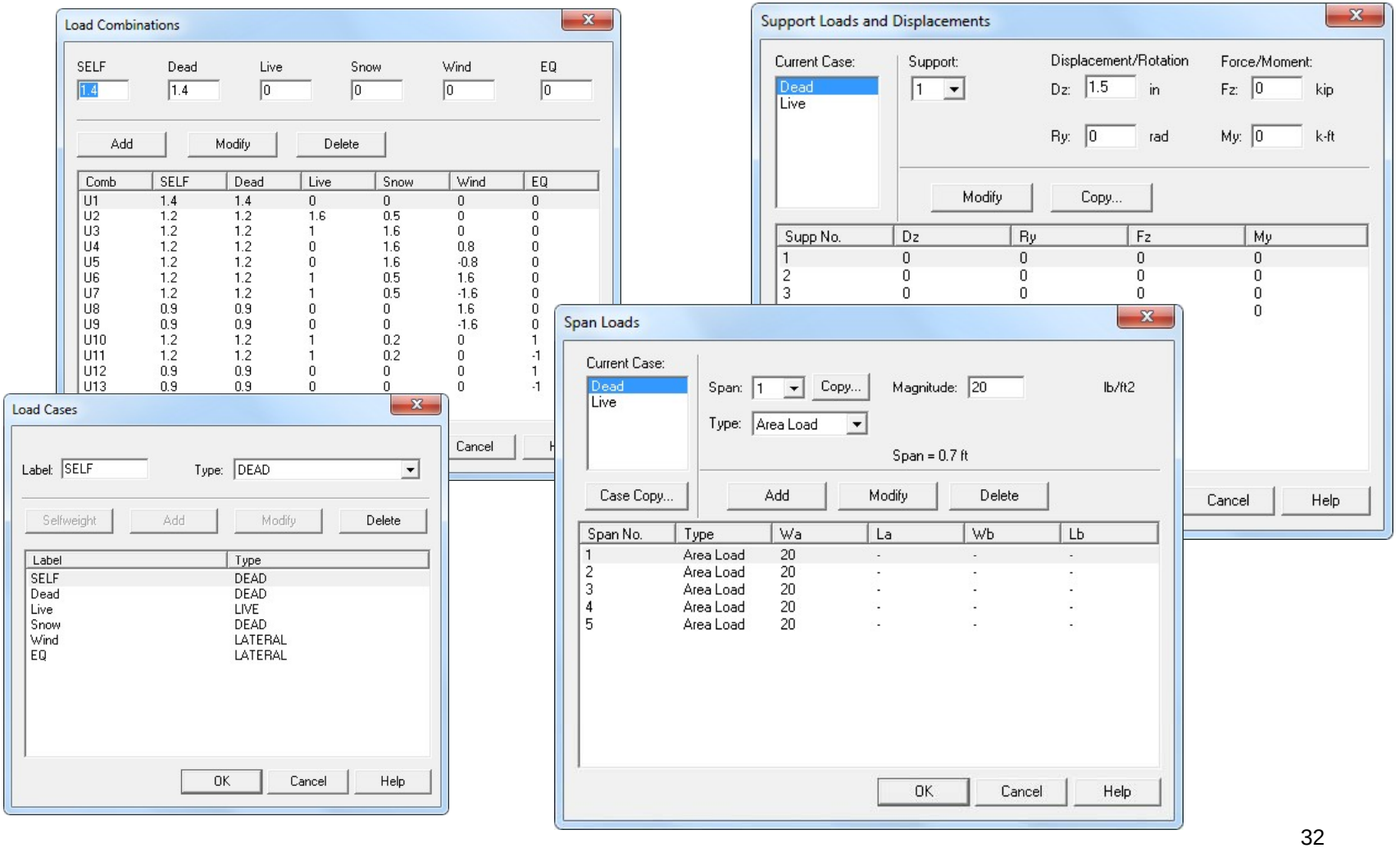
- Design



- Investigation

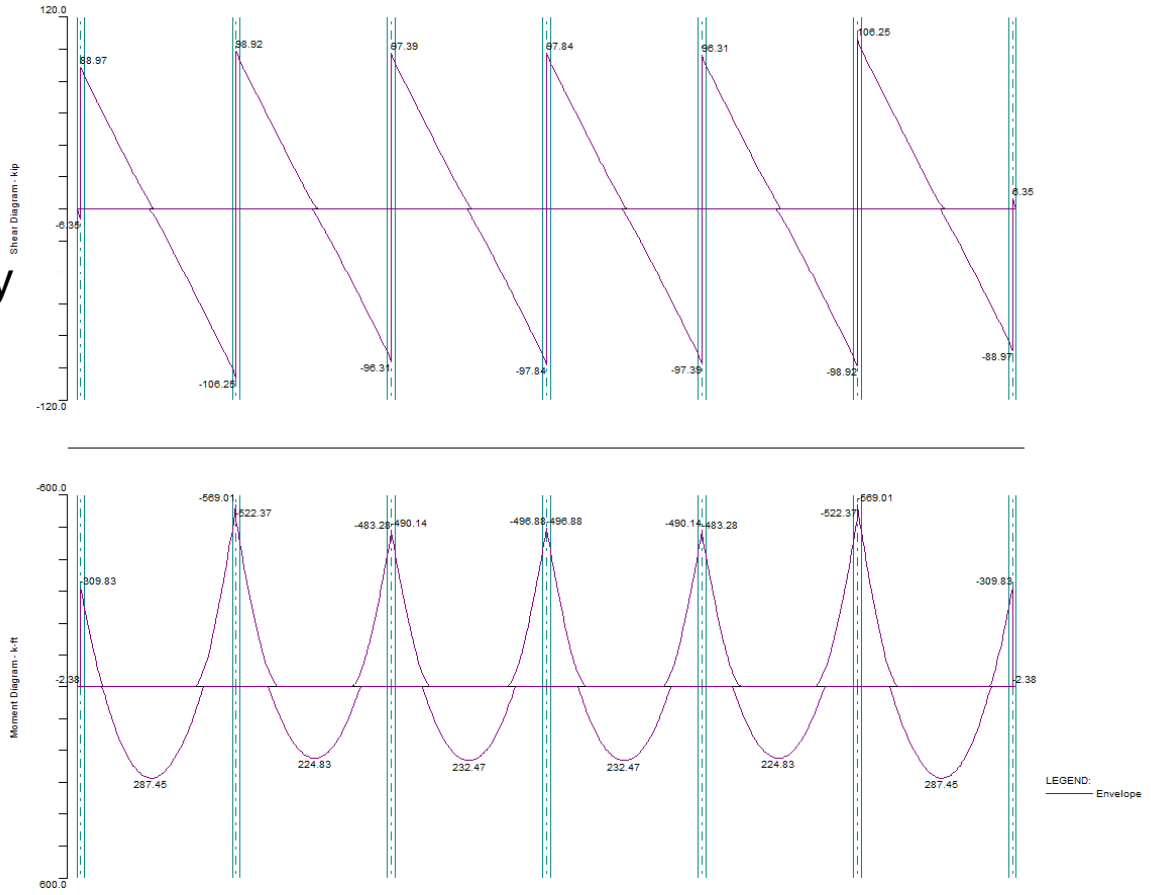


Loads


Load Combinations
SELF
Dead
Live
Snow
Wind
EQ
1.4
1.4
0
0
0
0
Add
Modify
Delete
Comb SELF Dead Live Snow Wind EQ
U1 1.4 1.4 0 0 0 0
U2 1.2 1.2 1.6 0.5 0 0
U3 1.2 1.2 1 1.6 0 0
U4 1.2 1.2 0 1.6 0.8 0
U5 1.2 1.2 0 1.6 -0.8 0
U6 1.2 1.2 1 0.5 1.6 0
U7 1.2 1.2 1 0.5 -1.6 0
U8 0.9 0.9 0 0 1.6 0
U9 0.9 0.9 0 0 -1.6 0
U10 1.2 1.2 1 0.2 0 1
U11 1.2 1.2 1 0.2 0 -1
U12 0.9 0.9 0 0 0 1
U13 0.9 0.9 0 0 0 -1
Cancel
Support Loads and Displacements
Current Case:
Dead
Live
Support:
1
Displacement/Rotation
Dz: 1.5 in
Ry: 0 rad
Force/Moment:
Fz: 0 kip
My: 0 k-ft
Modify
Copy...
Supp No. Dz Ry Fz My
1 0 0 0 0
2 0 0 0 0
3 0 0 0 0
0
Cancel
Help
Load Cases
Label: SELF
Type: DEAD
Selfweight
Add
Modify
Delete
Label Type
SELF DEAD
Dead DEAD
Live LIVE
Snow DEAD
Wind LATERAL
EQ LATERAL
OK
Cancel
Help
Span Loads
Current Case:
Dead
Live
Span: 1
Copy...
Magnitude: 20
lb/ft2
Type: Area Load
Span = 0.7 ft
Case Copy...
Add
Modify
Delete
Span No. Type Wa La Wb Lb
1 Area Load 20 - - -
2 Area Load 20 - - -
3 Area Load 20 - - -
4 Area Load 20 - - -
5 Area Load 20 - - -
OK
Cancel
Help

Graphical Output

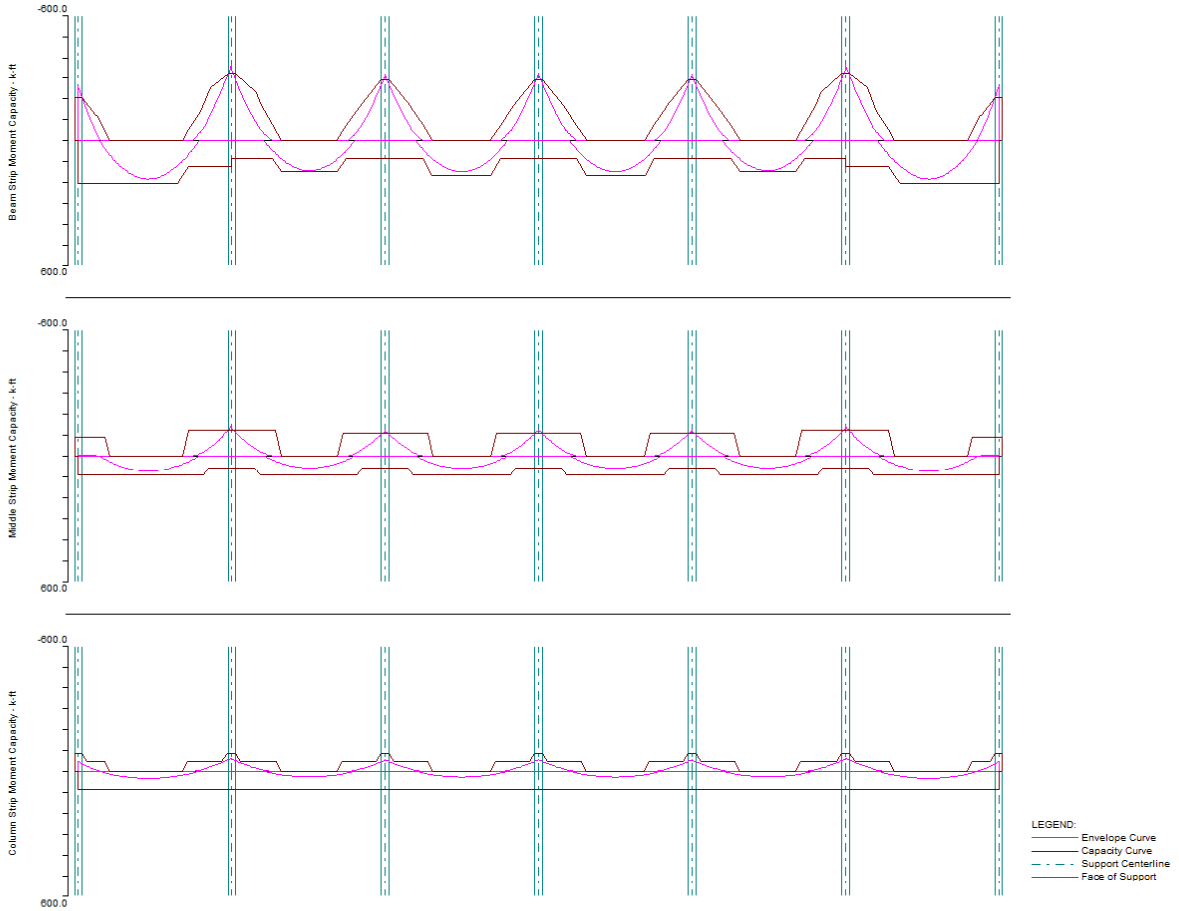
- Loads
- Internal Forces
- Moment Capacity
- Shear Capacity
- Deflections
- Reinforcemet



Internal Force Diagrams

Graphical Output

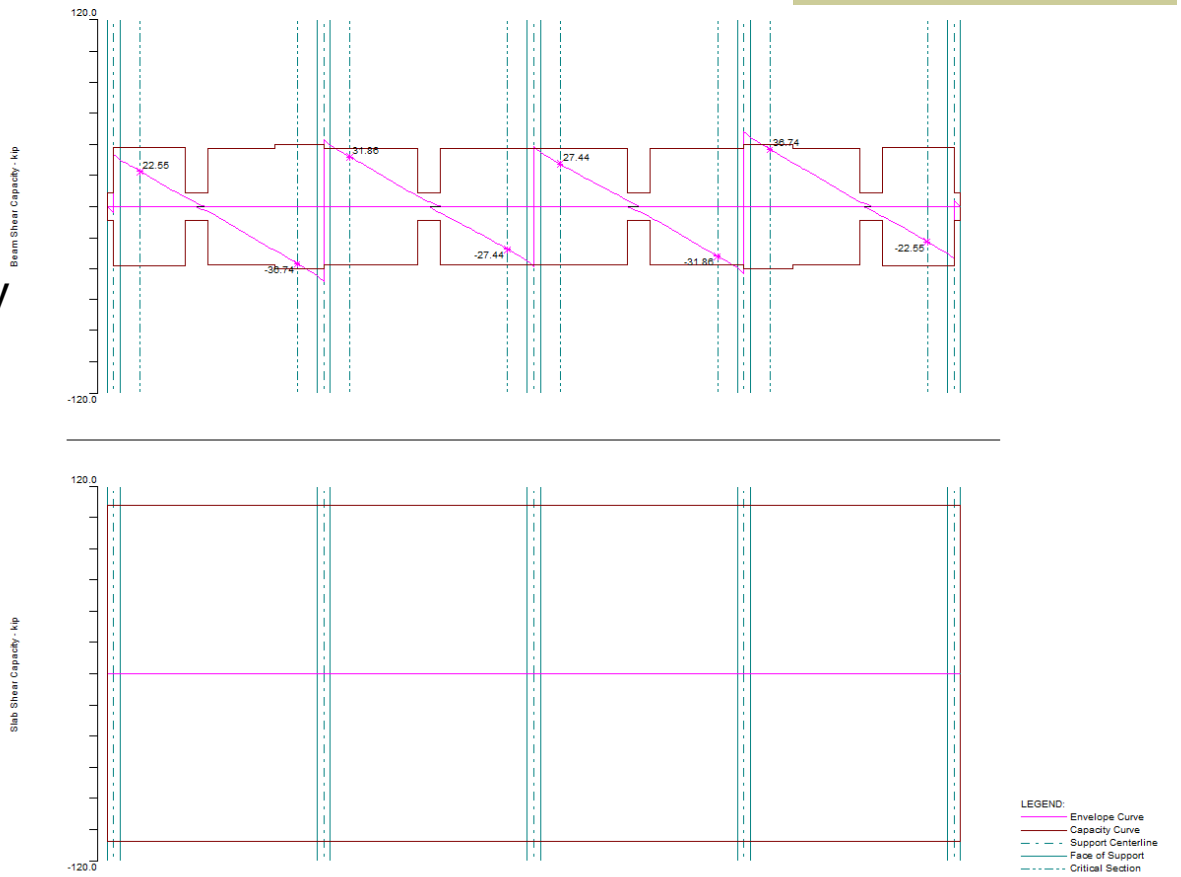
- Loads
- Internal Forces
- Moment Capacity
- Shear Capacity
- Deflections
- Reinforcemet



Moment Capacity Diagrams

Graphical Output

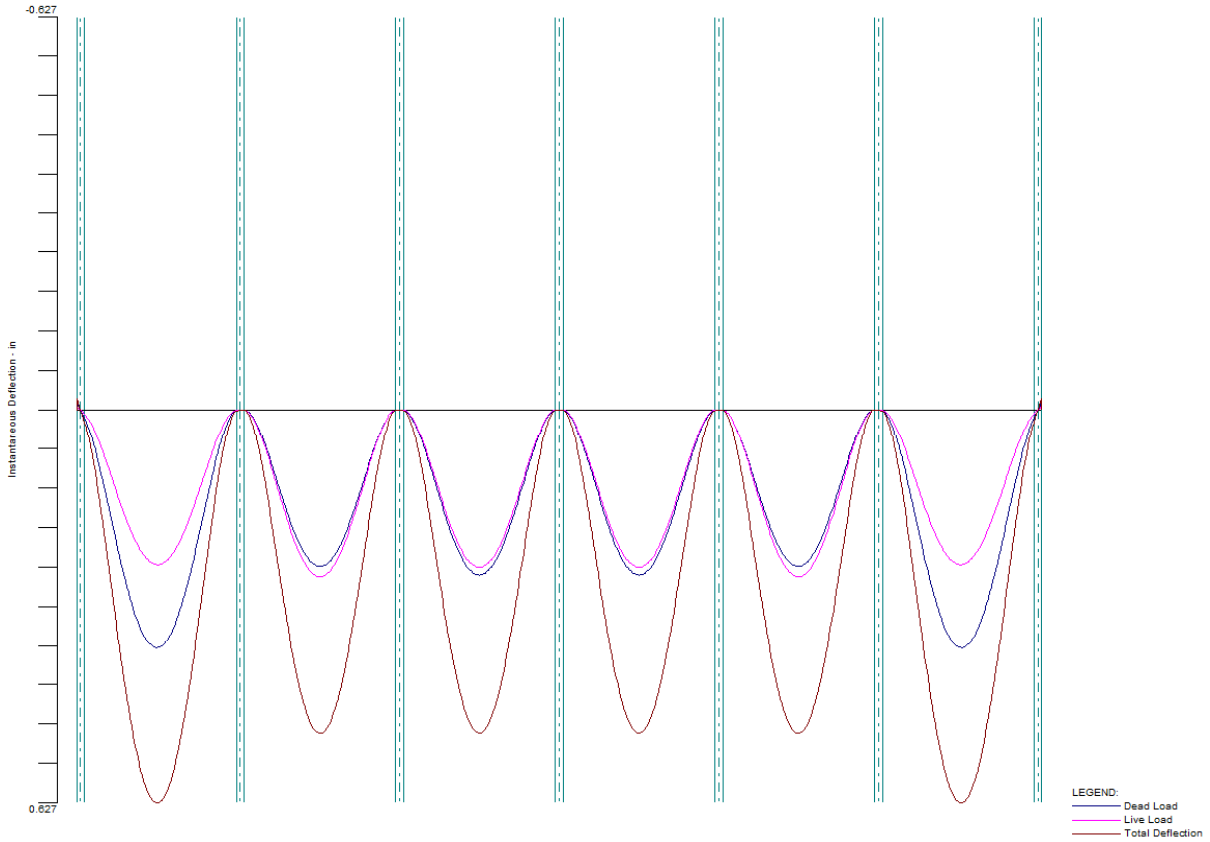
- Loads
- Internal Forces
- Moment Capacity
- Shear Capacity
- Deflections
- Reinforcemet



Shear Capacity Diagrams

Graphical Output

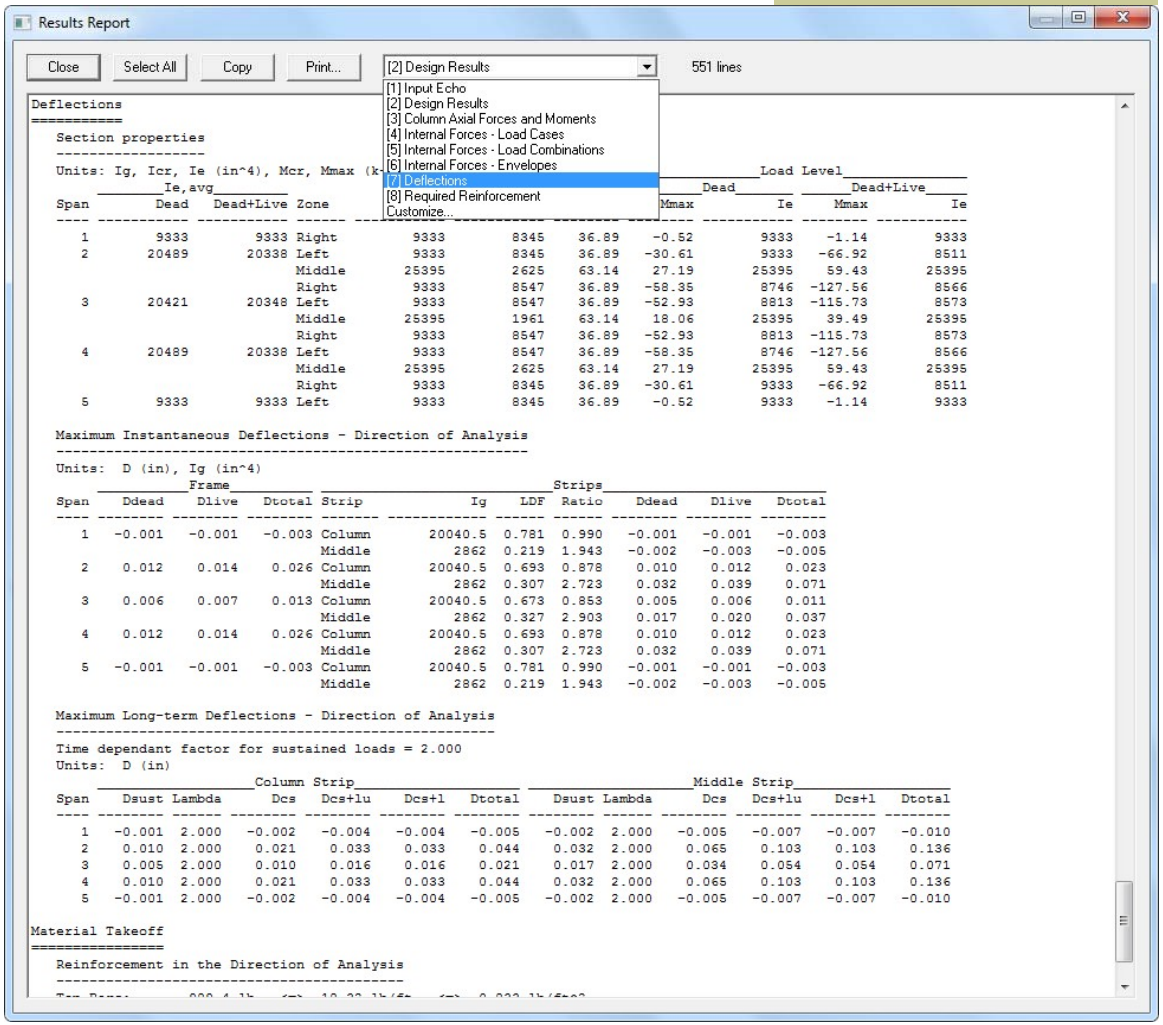
- Loads
- Internal Forces
- Moment Capacity
- Shear Capacity
- Deflections
- Reinforcemet



Deflection Diagram

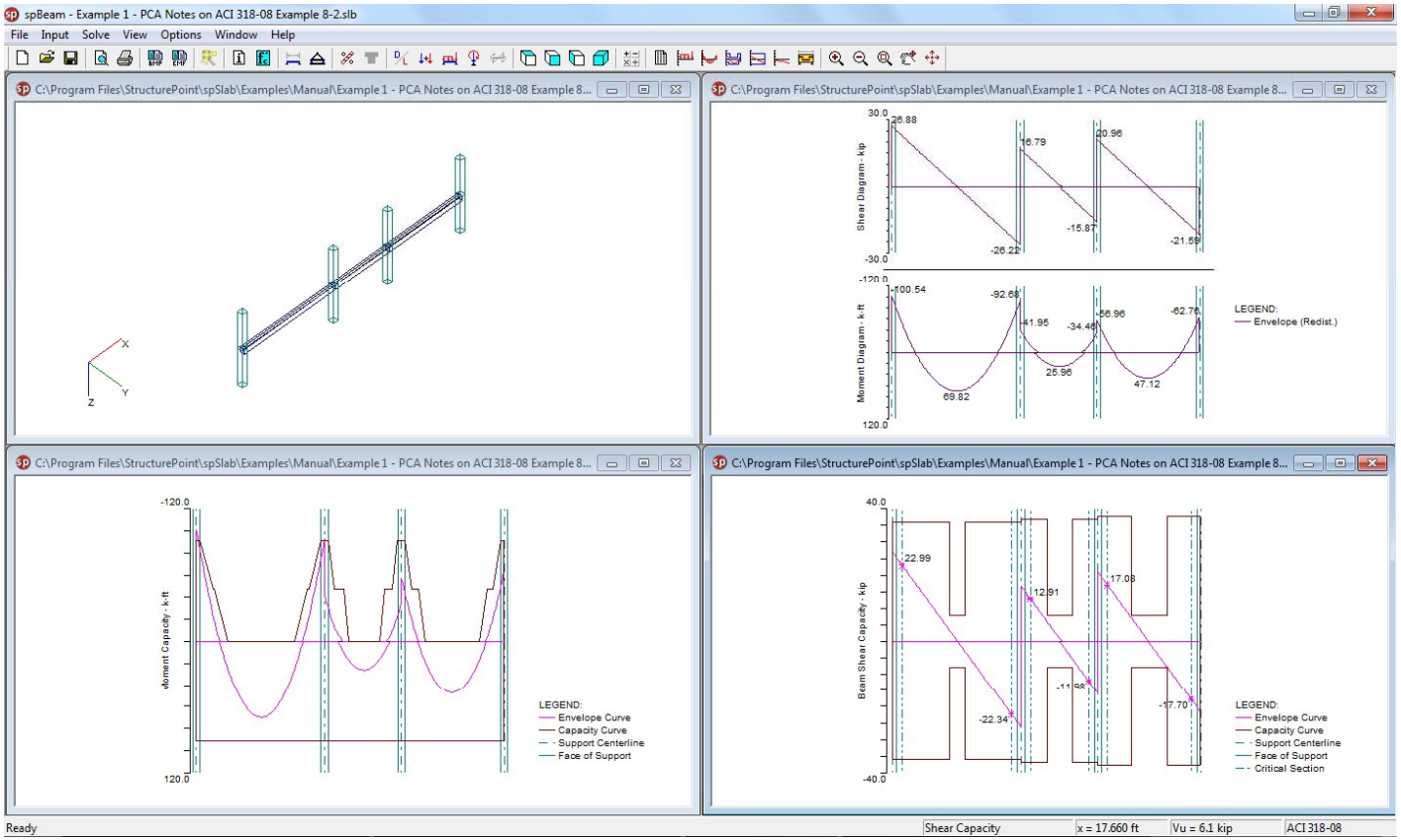
Text Ouput

- Input Echo
- Design Results
- Column Forces
- Internal Forces
- Deflections

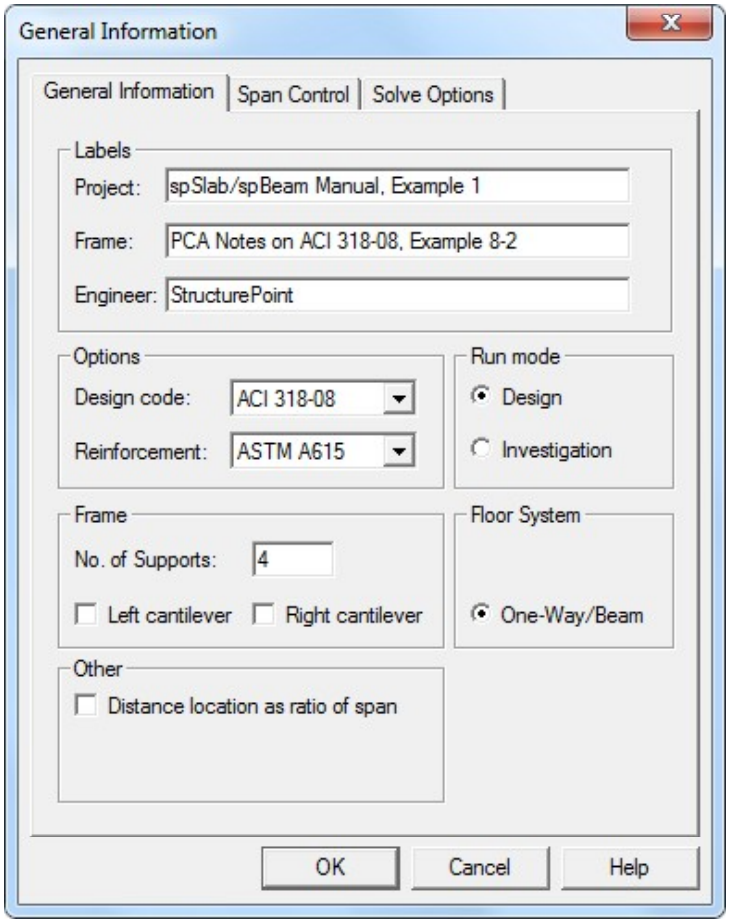


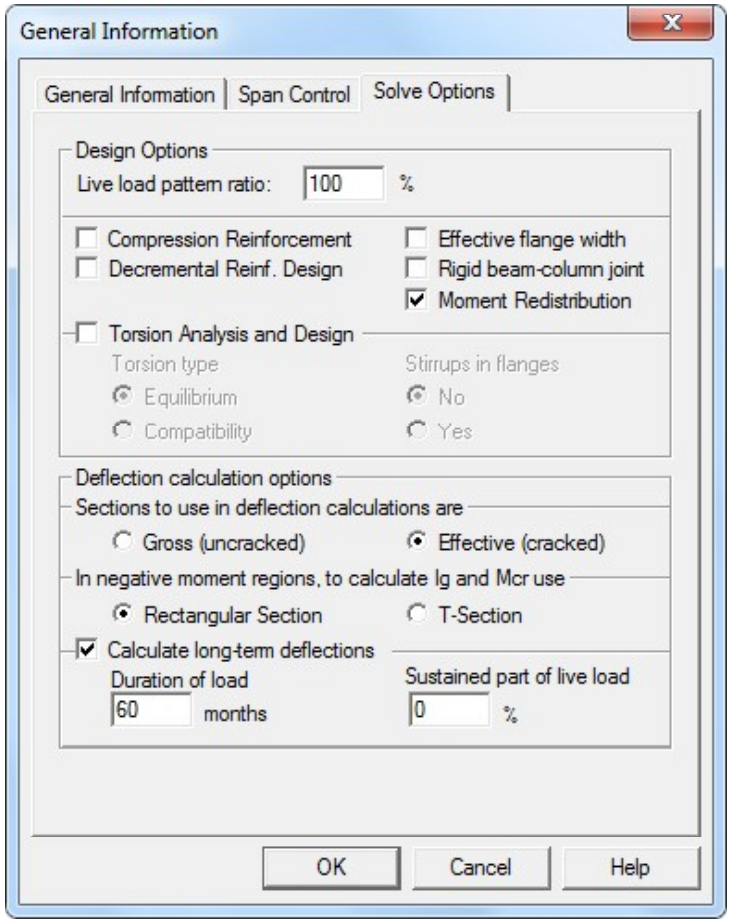
spbeam

- Analysis, design, and investigation of R/C beams and one-way slab systems



Options


General Information
General Information
Span Control
Solve Options
Labels
Project:
spSlab/spBeam Manual, Example 1
Frame:
PCA Notes on ACI 318-08, Example 8-2
Engineer:
StructurePoint
Options
Design code:
ACI 318-08
Reinforcement:
ASTM A615
Run mode
Design
Investigation
Frame
No. of Supports:
4
Left cantilever
Right cantilever
Floor System
One-Way/Beam
Other
Distance location as ratio of span
OK
Cancel
Help


General Information
General Information
Span Control
Solve Options
Design Options
Live load pattern ratio:
100
%
Compression Reinforcement
Decremental Reinf. Design
Effective flange width
Rigid beam-column joint
Moment Redistribution
Torsion Analysis and Design
Torsion type
Equilibrium
Compatibility
Stirrups in flanges
No
Yes
Deflection calculation options
Sections to use in deflection calculations are
Gross (uncracked)
Effective (cracked)
In negative moment regions, to calculate Ig and Mcr use
Rectangular Section
T-Section
Calculate long-term deflections
Duration of load
60
months
Sustained part of live load
0
%
OK
Cancel
Help

Moment Redistribution

For ACI 318-08, 05, and 02

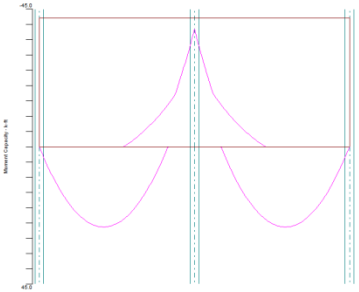
$$\delta = \begin{cases} 0, & \text{if } \varepsilon_t < 0.0075 \\ 1000\varepsilon_t, & \text{if } \varepsilon_t \geq 0.0075 \end{cases} \text{ or}$$

For ACI 318-99

$$\delta = \begin{cases} 0, & \text{if } (\rho - \rho') > 0.5\rho_b \\ 20\left(\frac{\rho-\rho'}{\rho_b}\right), & \text{if } (\rho - \rho') \leq 0.5\rho_b \end{cases} \text{ or}$$

For CSA A23.3

$$\delta = 30 - 50\frac{c}{d}$$

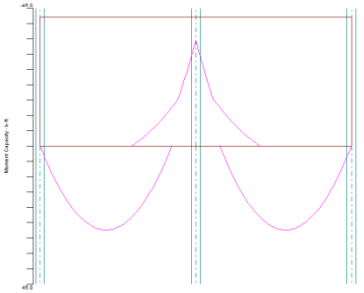


Top Reinforcement

Units: Width (ft), Mmax (k-ft), Xmax (ft), As (in^2), Sp (in)

Span	Zone	Width	Mmax	Xmax	AsPrime	AsMin	AsMax	SpReq	AsReq	Bars	
1	Left	2.08	0.00	0.667	0.000	0.000	1.056	9.792	0.000	3-#5	*5
	Middle	2.08	3.70	15.400	0.000	0.094	1.056	9.792	0.071	3-#5	*3 *5
	Right	2.08	33.18	23.333	0.000	0.195	1.056	9.792	0.706	3-#5	
2	Left	2.08	33.18	0.667	0.000	0.195	1.056	9.792	0.706	3-#5	
	Middle	2.08	3.70	8.600	0.000	0.094	1.056	9.792	0.071	3-#5	*3 *5
	Right	2.08	0.00	23.333	0.000	0.000	1.056	9.792	0.000	3-#5	*5

NOTES:
*3 - Design governed by minimum reinforcement.
*5 - Number of bars governed by maximum allowable spacing.



Moment Redistribution Factors

Units: Org.Mu (k-ft)

Supp	Side	Org.Mu	Calculated Iter.#	Calculated EpsilonT	Calculated Factor[%]	User Limit[%]	Applied Factor[%]
1	Right	0.00	0	0.00000	0.00	0.00	0.00
2	Left	33.18	5	0.00998	9.98	10.00	9.98
2	Right	33.18	5	0.00998	9.98	10.00	9.98
3	Left	0.00	0	0.00000	0.00	0.00	0.00

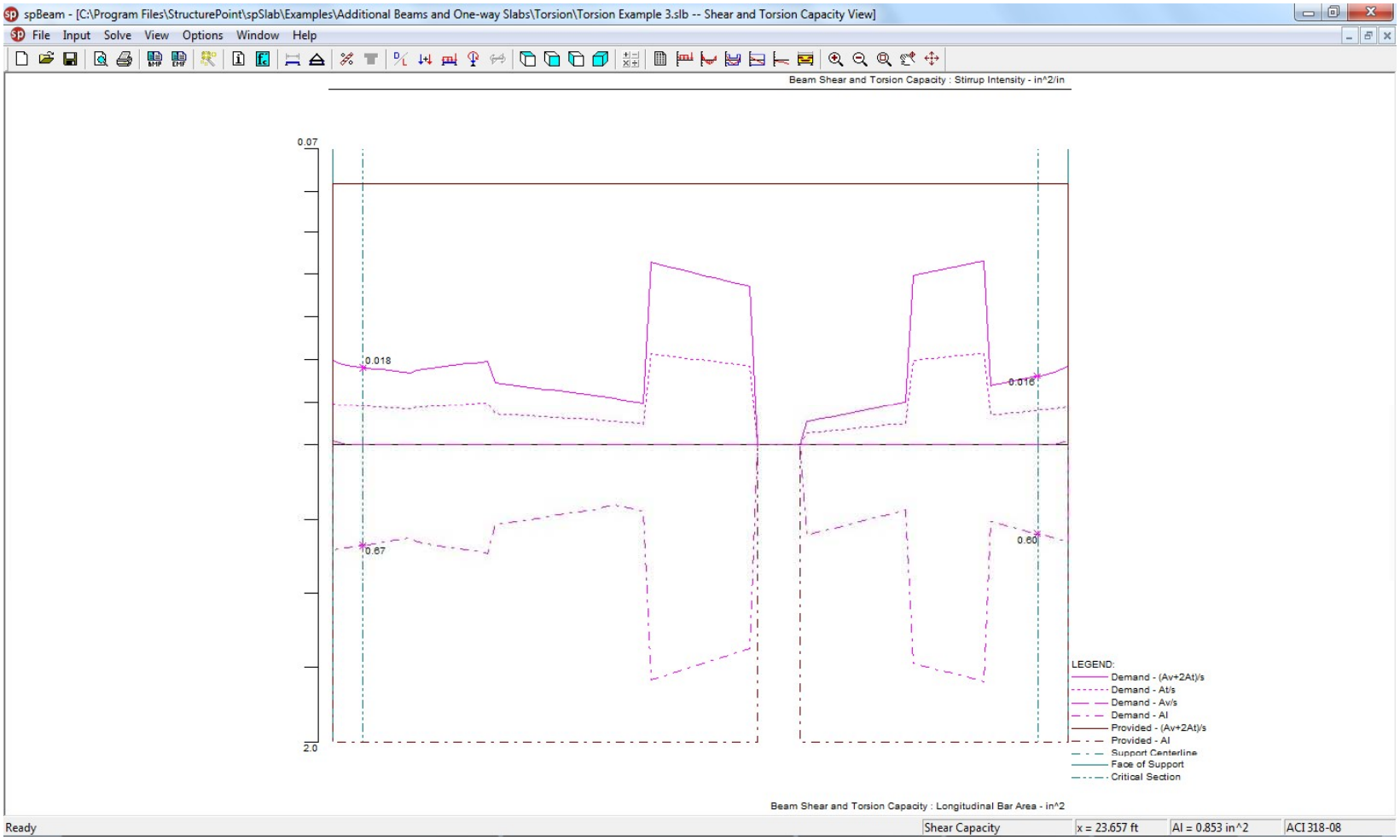
Top Reinforcement

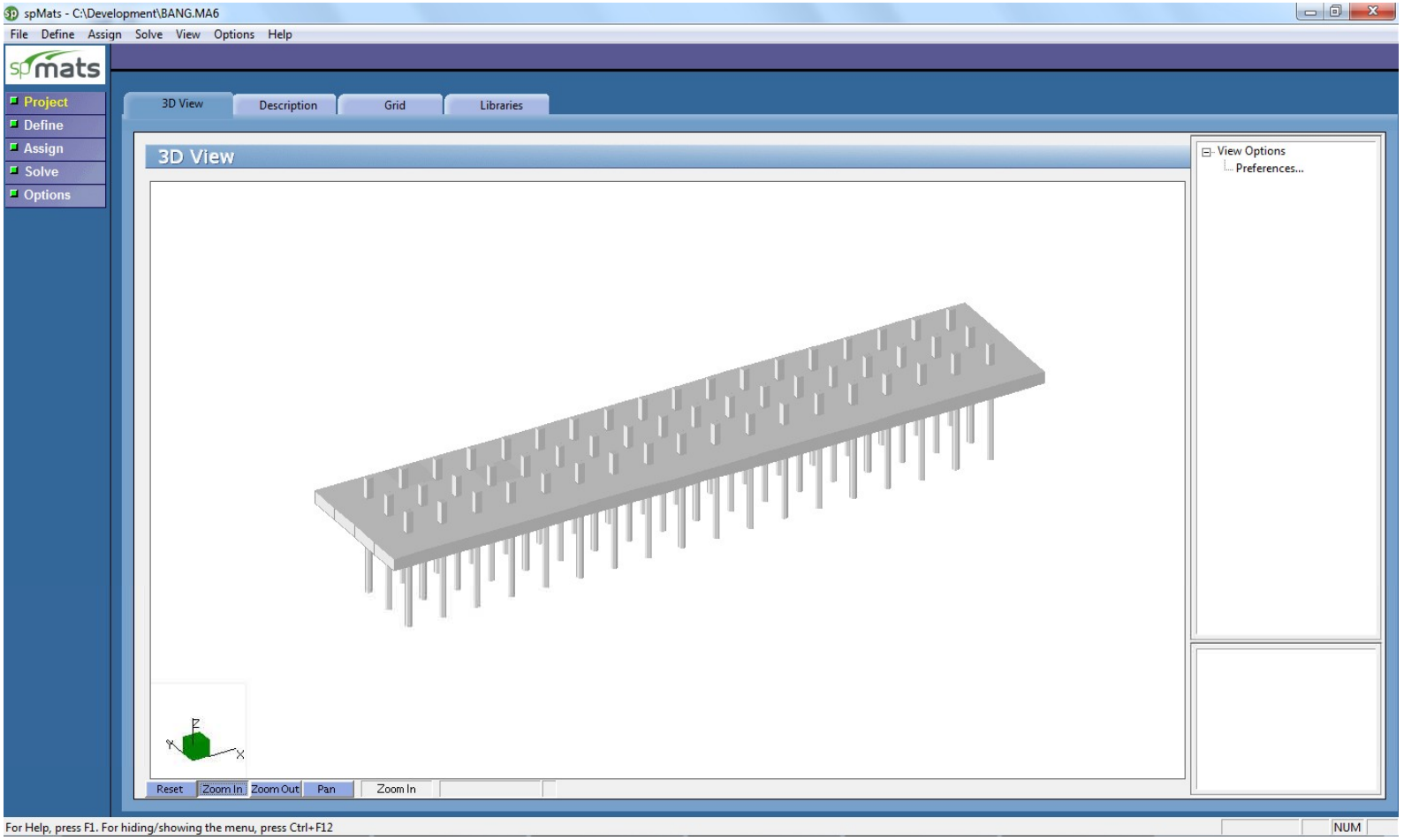
Units: Width (ft), Mmax (k-ft), Xmax (ft), As (in^2), Sp (in)

Span	Zone	Width	Mmax	Xmax	AsPrime	AsMin	AsMax	SpReq	AsReq	Bars	
1	Left	2.08	0.00	0.667	0.000	0.000	1.056	9.792	0.000	3-#5	*5
	Middle	2.08	2.01	15.400	0.000	0.082	1.056	9.792	0.038	3-#5	*3 *5
	Right	2.08	29.46	23.333	0.000	0.195	1.056	9.792	0.618	3-#5	*5
2	Left	2.08	29.46	0.667	0.000	0.195	1.056	9.792	0.618	3-#5	*5
	Middle	2.08	2.01	8.600	0.000	0.082	1.056	9.792	0.038	3-#5	*3 *5
	Right	2.08	0.00	23.333	0.000	0.000	1.056	9.792	0.000	3-#5	*5

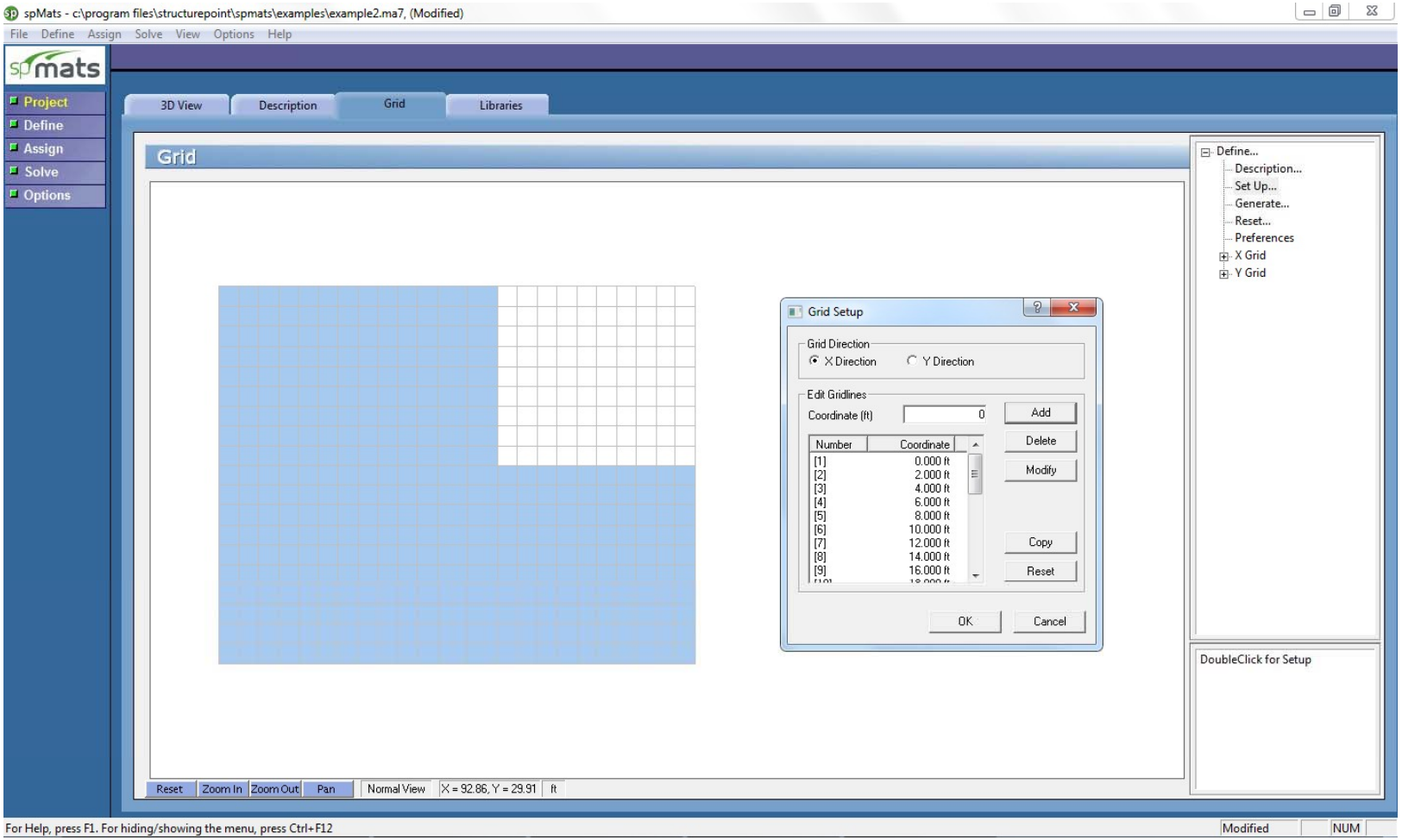
NOTES:
*3 - Design governed by minimum reinforcement.
*5 - Number of bars governed by maximum allowable spacing.

Shear and Torsion

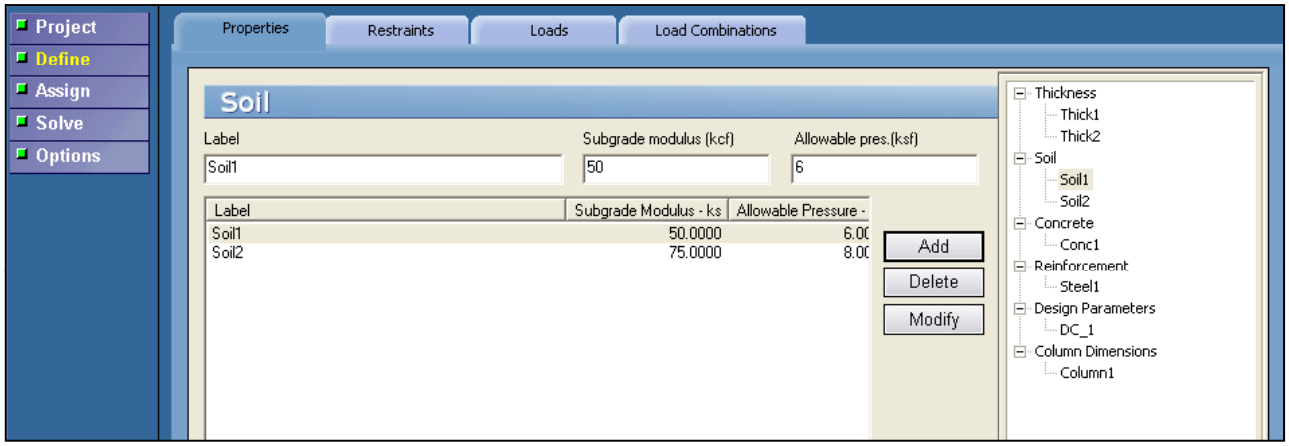


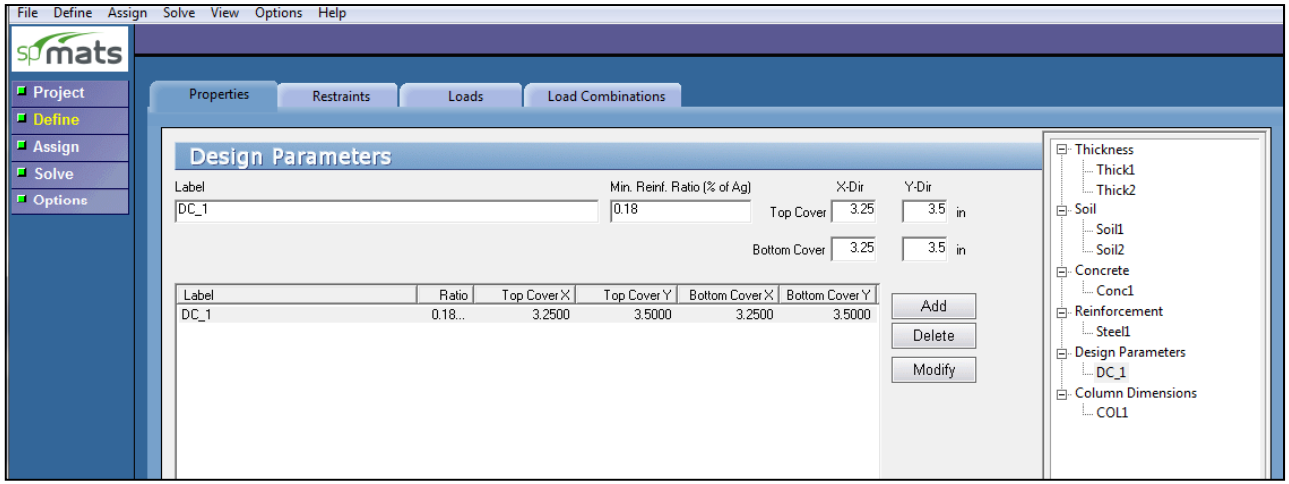

spMats - C:\Development\BANG.MA6
File Define Assign Solve View Options Help
spmats
Project
Define
Assign
Solve
Options
3D View
Description
Grid
Libraries
3D View
View Options
Preferences...
Reset
Zoom In
Zoom Out
Pan
Zoom In
For Help, press F1. For hiding/showing the menu, press Ctrl+F12
NUM

Meshing

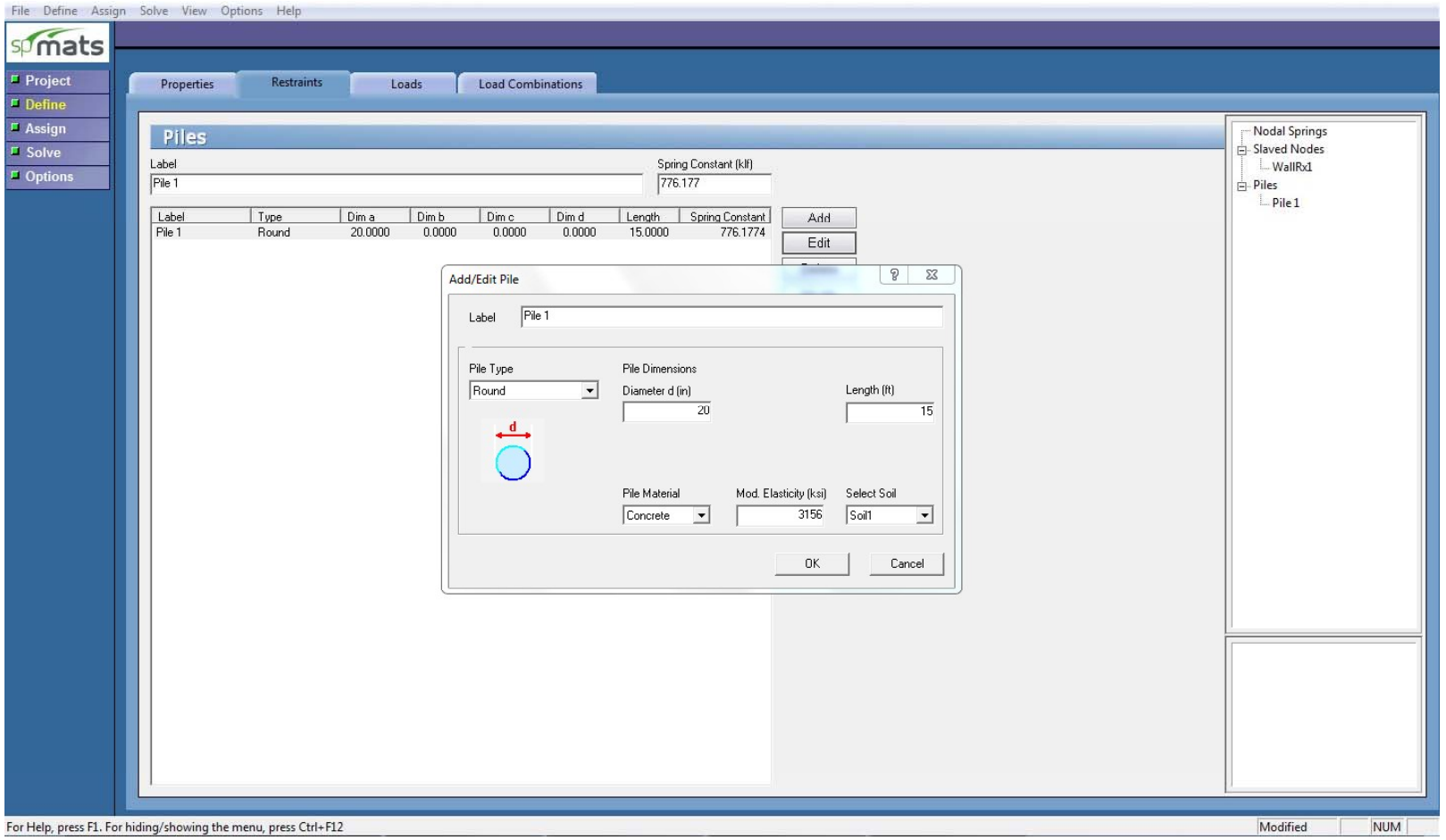

spMats - c:\program files\structurepoint\spmats\examples\example2.ma7, (Modified)
File Define Assign Solve View Options Help
Project
Define
Assign
Solve
Options
3D View
Description
Grid
Libraries
Grid
Define...
Description...
Set Up...
Generate...
Reset...
Preferences
X Grid
Y Grid
Grid Setup
Grid Direction
X Direction
Y Direction
Edit Gridlines
Coordinate (ft)
Add
Delete
Modify
Copy
Reset
Number
Coordinate
[1] 0.000 ft
[2] 2.000 ft
[3] 4.000 ft
[4] 6.000 ft
[5] 8.000 ft
[6] 10.000 ft
[7] 12.000 ft
[8] 14.000 ft
[9] 16.000 ft
OK
Cancel
DoubleClick for Setup
Reset
Zoom In
Zoom Out
Pan
Normal View
X = 92.86, Y = 29.91
ft
For Help, press F1. For hiding/showing the menu, press Ctrl+F12
Modified
NUM

Define Properties

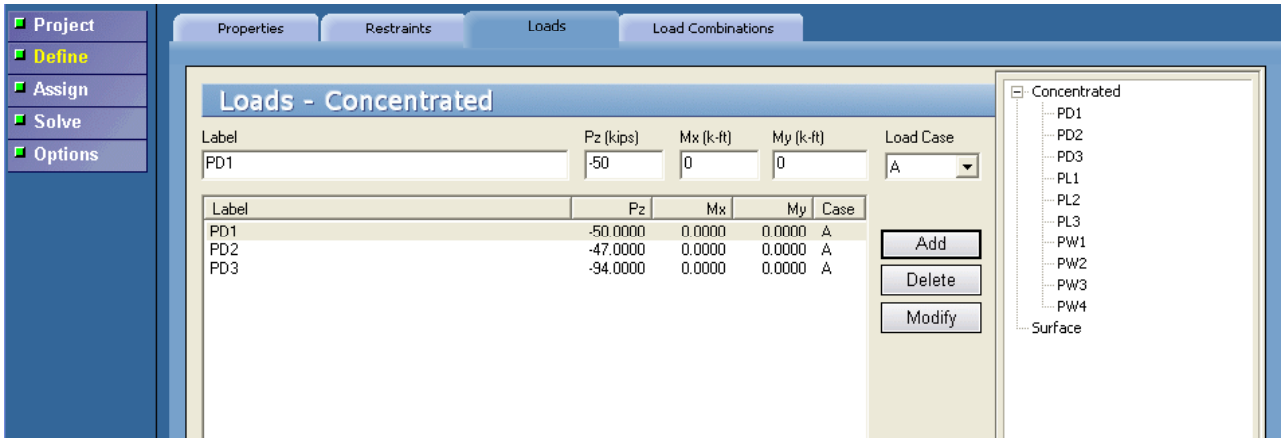


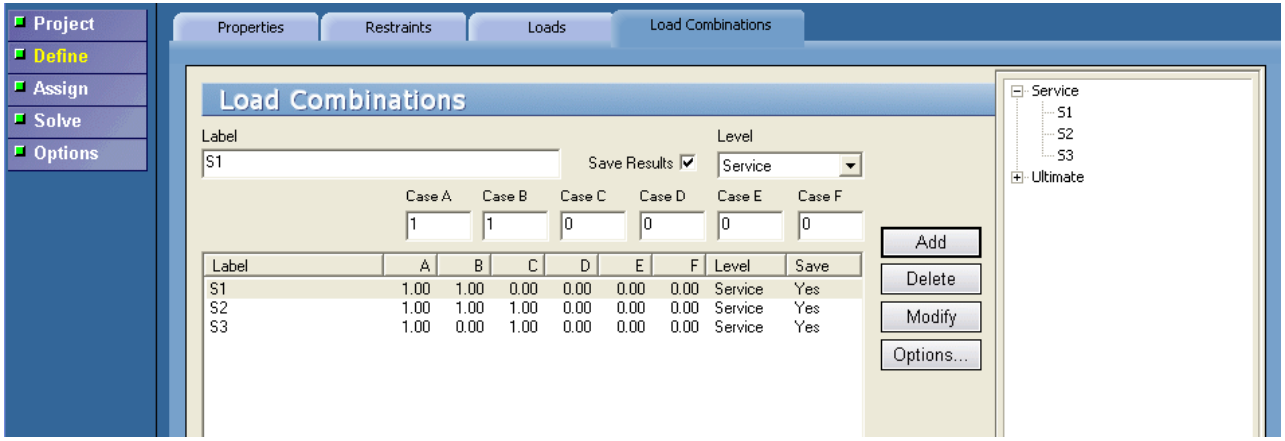


Restraints

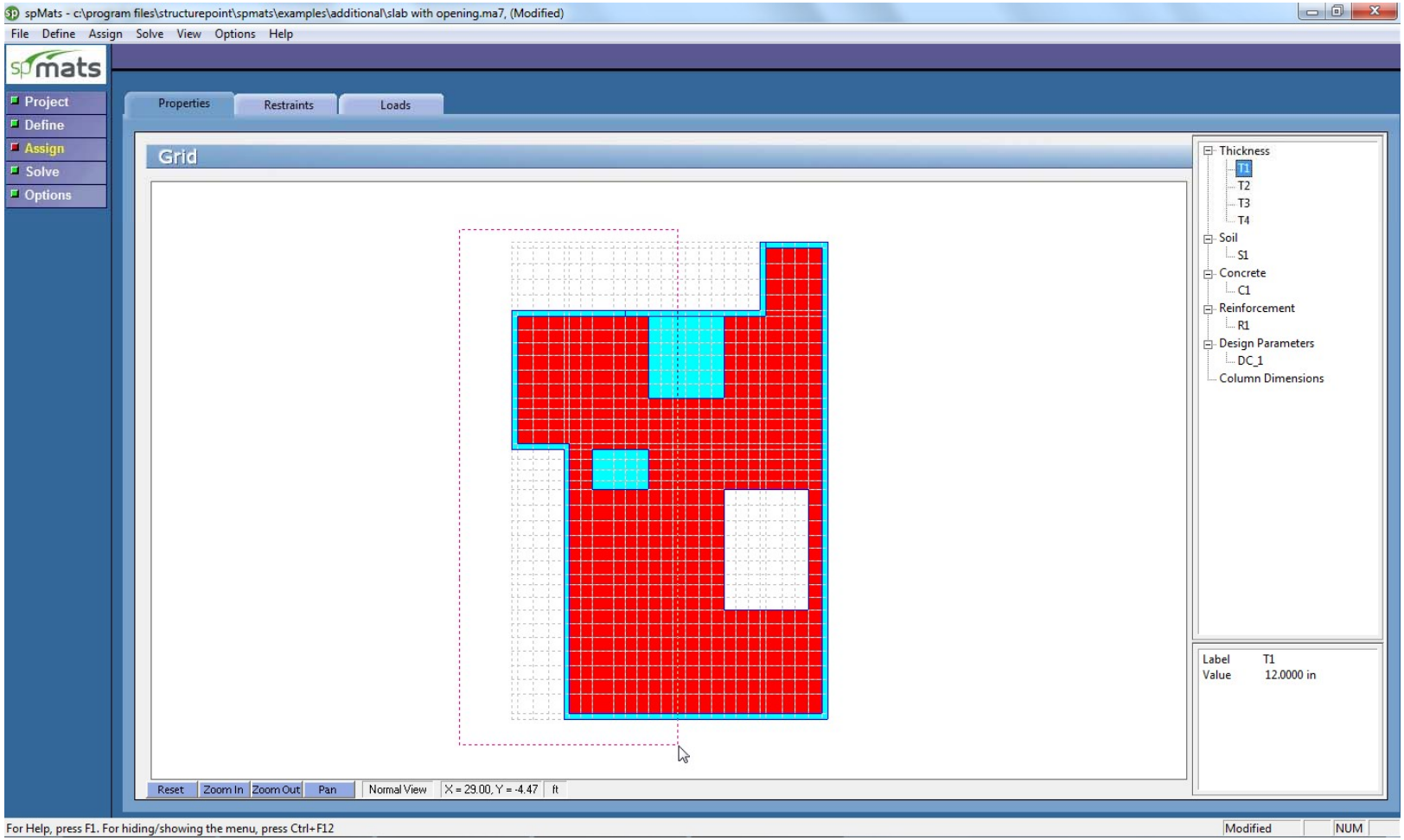

File Define Assign Solve View Options Help
spmats
Project
Define
Assign
Solve
Options
Properties
Restraints
Loads
Load Combinations
Piles
Label
Pile 1
Spring Constant (klf)
776.177
Label Type Dim a Dim b Dim c Dim d Length Spring Constant
Pile 1 Round 20.0000 0.0000 0.0000 0.0000 15.0000 776.1774
Add
Edit
Add/Edit Pile
Label
Pile 1
Pile Type
Round
Pile Dimensions
Diameter d (in)
20
Length (ft)
15
d
Pile Material
Concrete
Mod. Elasticity (ksi)
3156
Select Soil
Soil1
OK
Cancel
Nodal Springs
Slaved Nodes
WallRx1
Piles
Pile 1
For Help, press F1. For hiding/showing the menu, press Ctrl+F12
Modified
NUM

Defining Loads

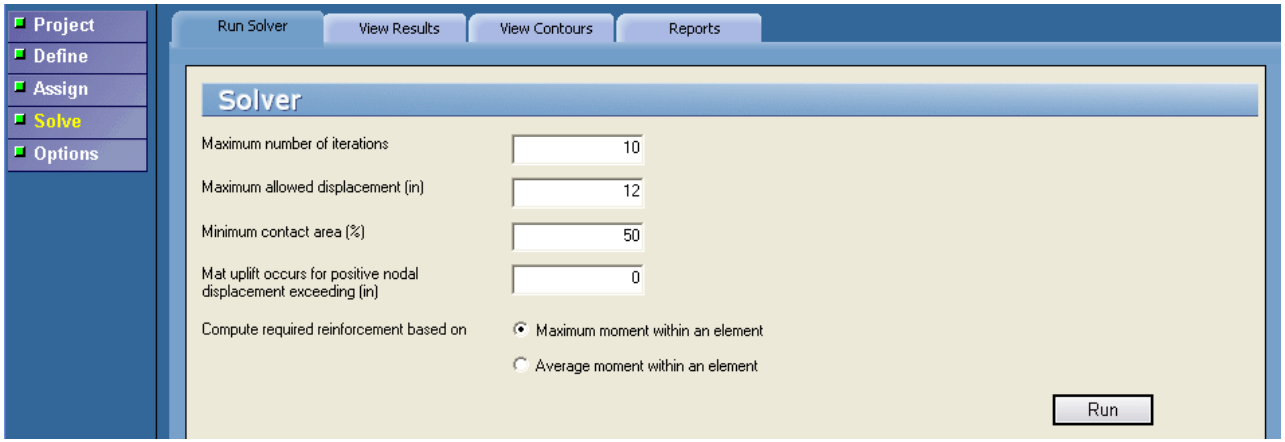


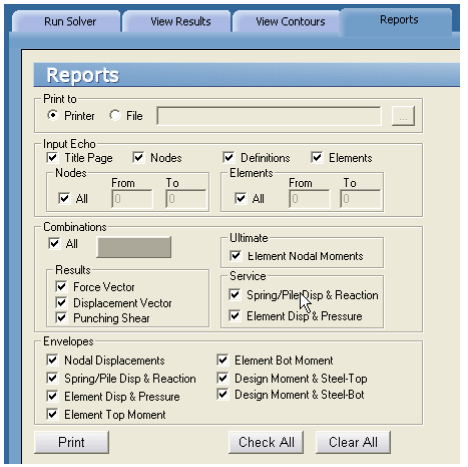


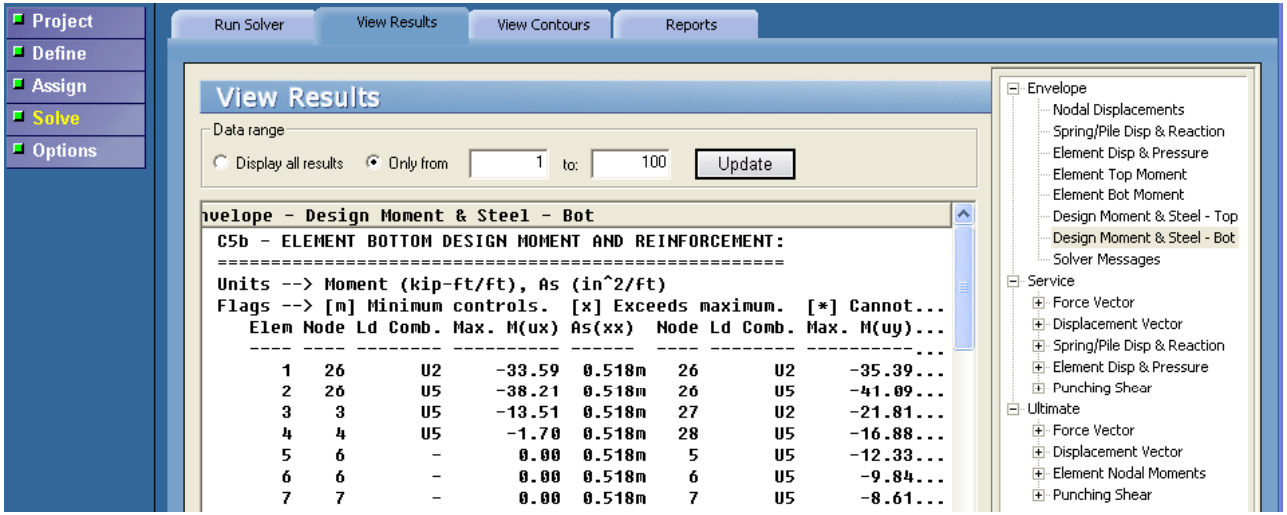
Assign


spMats - c:\program files\structurepoint\spmats\examples\additional\slab with opening.ma7, (Modified)
File Define Assign Solve View Options Help
spmats
Project
Define
Assign
Solve
Options
Properties
Restraints
Loads
Grid
Thickness
T1
T2
T3
T4
Soil
S1
Concrete
C1
Reinforcement
R1
Design Parameters
DC_1
Column Dimensions
Label T1
Value 12.0000 in
Reset
Zoom In
Zoom Out
Pan
Normal View
X = 29.00, Y = -4.47
ft
For Help, press F1. For hiding/showing the menu, press Ctrl+F12
Modified
NUM

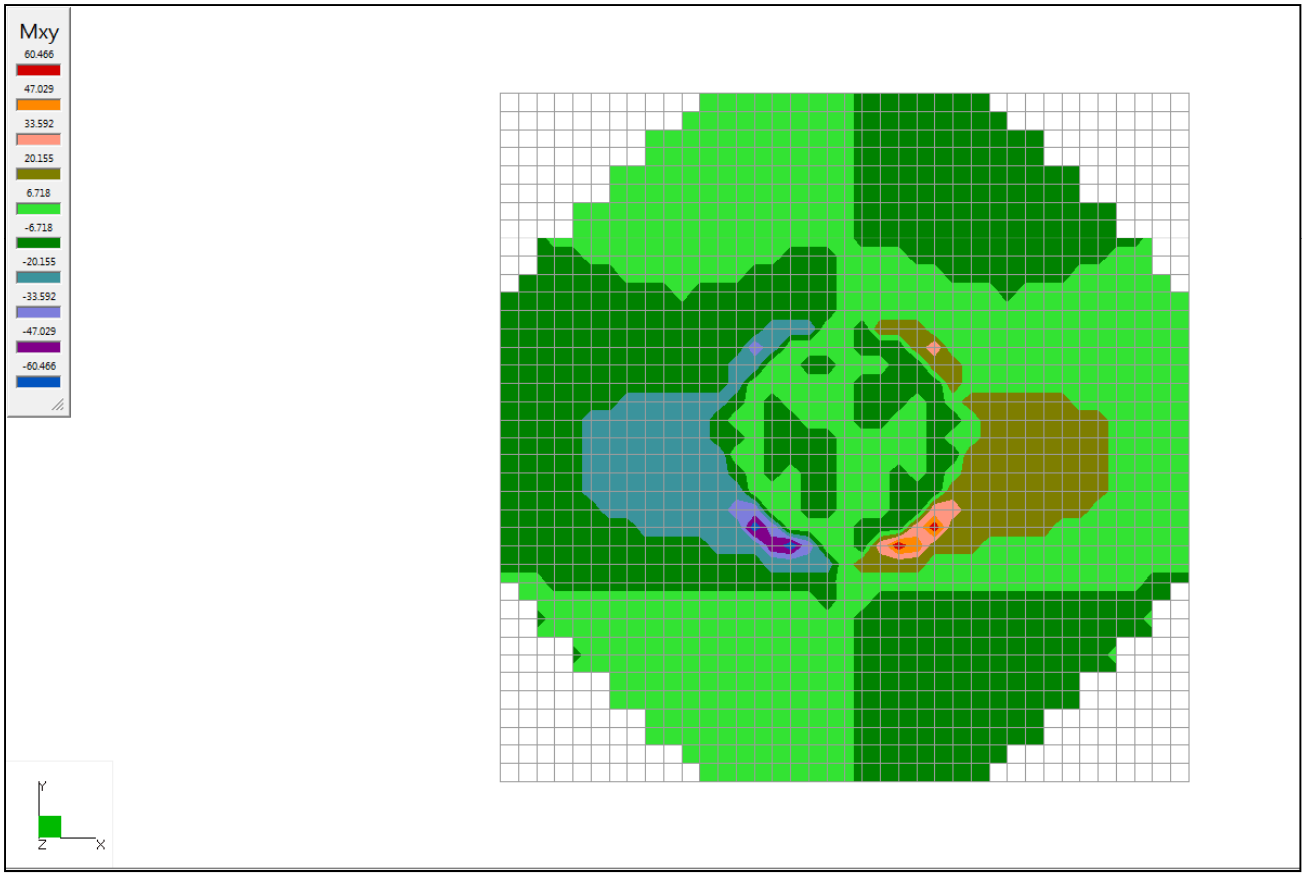
Solution

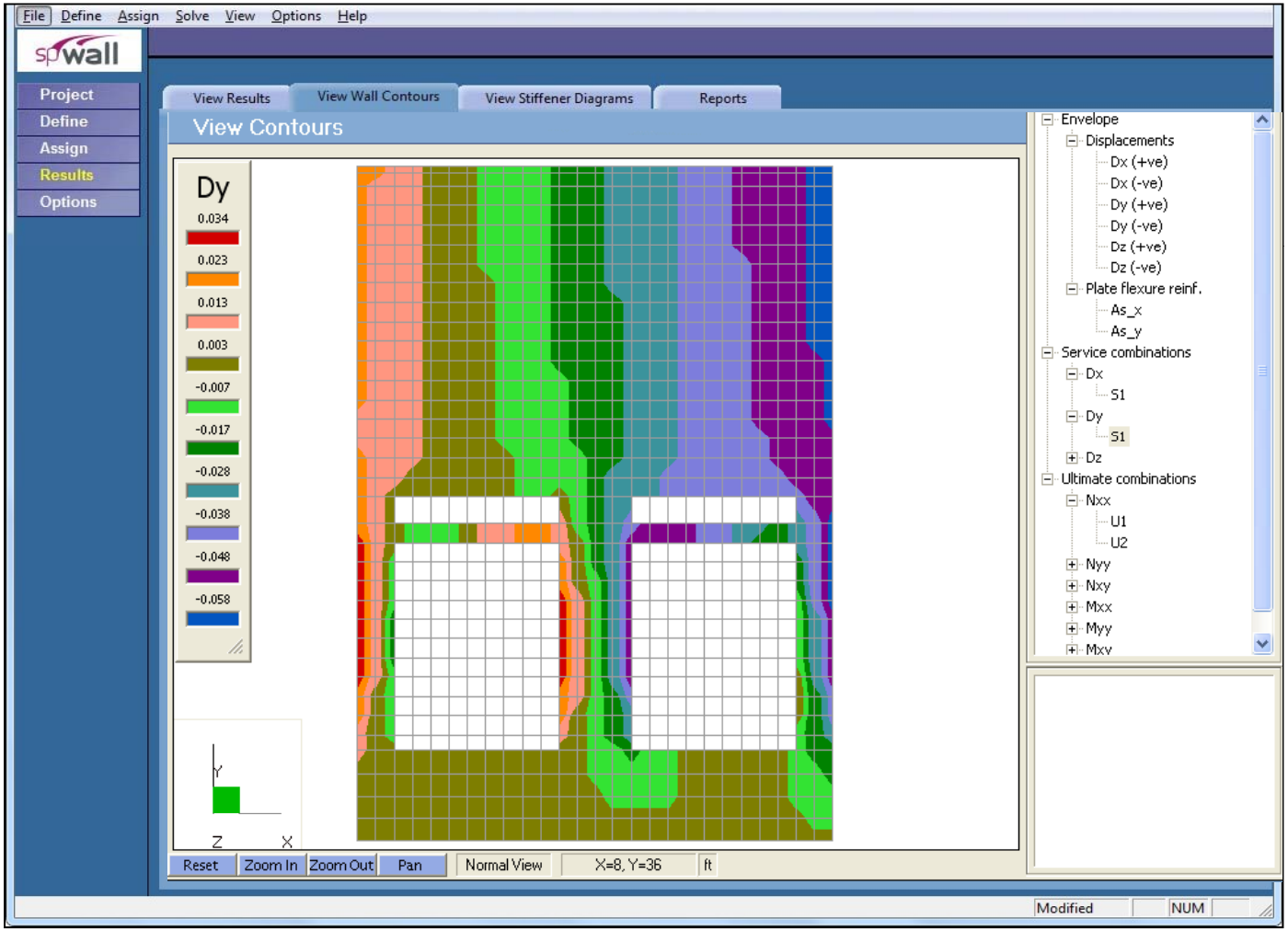

Project
Define
Assign
Solve
Options
Run Solver
View Results
View Contours
Reports
Solver
Maximum number of iterations
10
Maximum allowed displacement (in)
12
Minimum contact area (%)
50
Mat uplift occurs for positive nodal displacement exceeding (in)
0
Compute required reinforcement based on
Maximum moment within an element
Average moment within an element
Run


Run Solver
View Results
View Contours
Reports
Reports
Print to
Printer
File
Input Echo
Title Page
Nodes
Definitions
Elements
Combinations
All
Ultimate
Element Nodal Moments
Results
Force Vector
Displacement Vector
Punching Shear
Service
Spring/Pile Disp & Reaction
Element Disp & Pressure
Envelopes
Nodal Displacements
Spring/Pile Disp & Reaction
Element Disp & Pressure
Element Top Moment
Element Bot Moment
Design Moment & Steel-Top
Design Moment & Steel-Bot
Print
Check All
Clear All

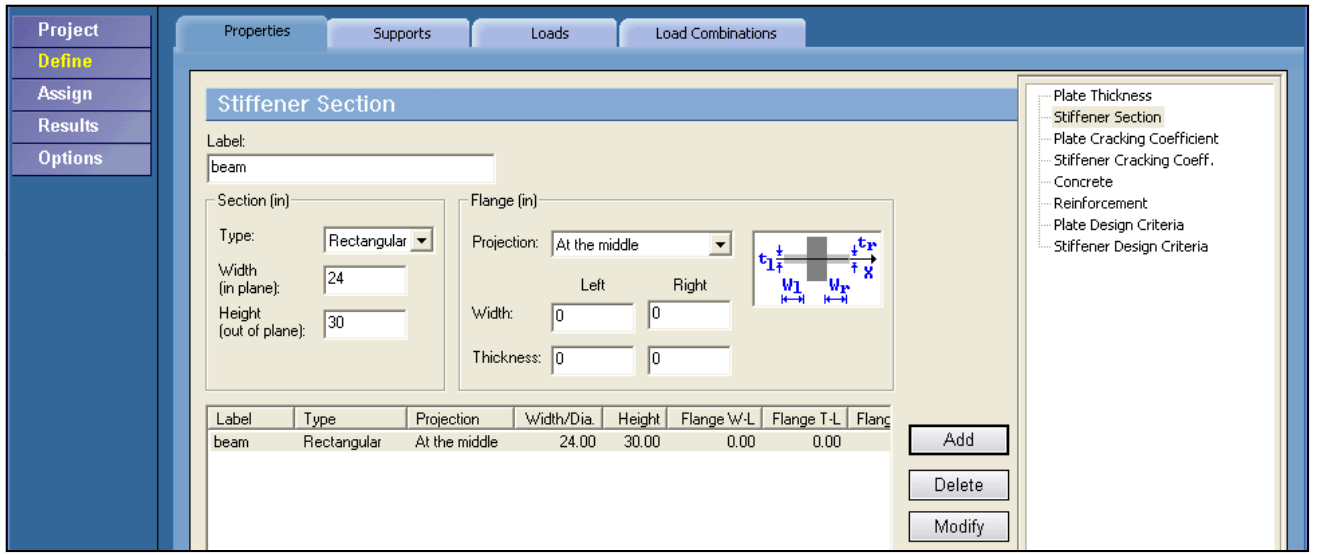

Project
Define
Assign
Solve
Options
Run Solver
View Results
View Contours
Reports
View Results
Data range
Display all results
Only from
1
to:
100
Update
velope - Design Moment & Steel - Bot
C5b - ELEMENT BOTTOM DESIGN MOMENT AND REINFORCEMENT:
Units --> Moment (kip-ft/ft), As (in^2/ft)
Flags --> [m] Minimum controls. [x] Exceeds maximum. [*] Cannot...
Elem Node Ld Comb. Max. M(ux) As(xx) Node Ld Comb. Max. M(uy)...
1 26 U2 -33.59 0.518m 26 U2 -35.39...
2 26 U5 -38.21 0.518m 26 U5 -41.09...
3 3 U5 -13.51 0.518m 27 U2 -21.81...
4 4 U5 -1.70 0.518m 28 U5 -16.88...
5 6 - 0.00 0.518m 5 U5 -12.33...
6 6 - 0.00 0.518m 6 U5 -9.84...
7 7 - 0.00 0.518m 7 U5 -8.61...
Envelope
Nodal Displacements
Spring/Pile Disp & Reaction
Element Disp & Pressure
Element Top Moment
Element Bot Moment
Design Moment & Steel - Top
Design Moment & Steel - Bot
Solver Messages
Service
Force Vector
Displacement Vector
Spring/Pile Disp & Reaction
Element Disp & Pressure
Punching Shear
Ultimate
Force Vector
Displacement Vector
Element Nodal Moments
Punching Shear

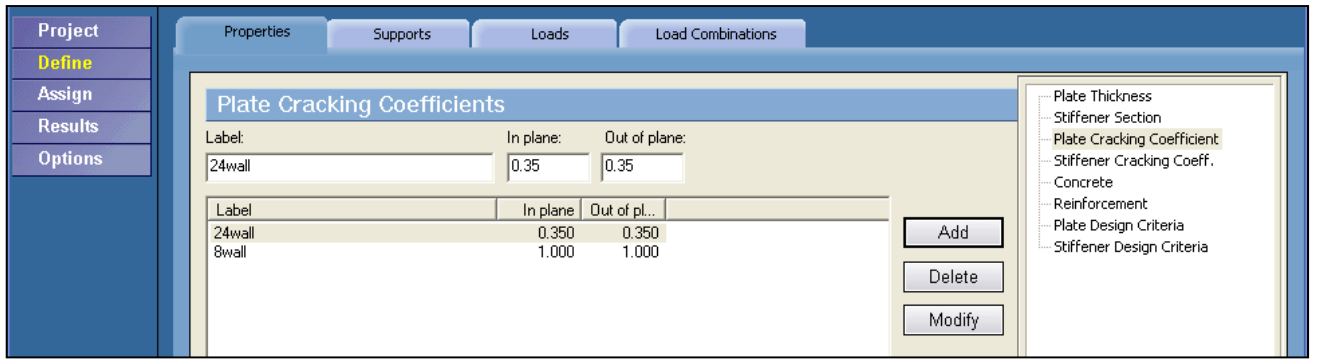
Contours


Mxy
60.466
47.029
33.592
20.155
6.718
-6.718
-20.155
-33.592
-47.029
-60.466
Y
Z
X

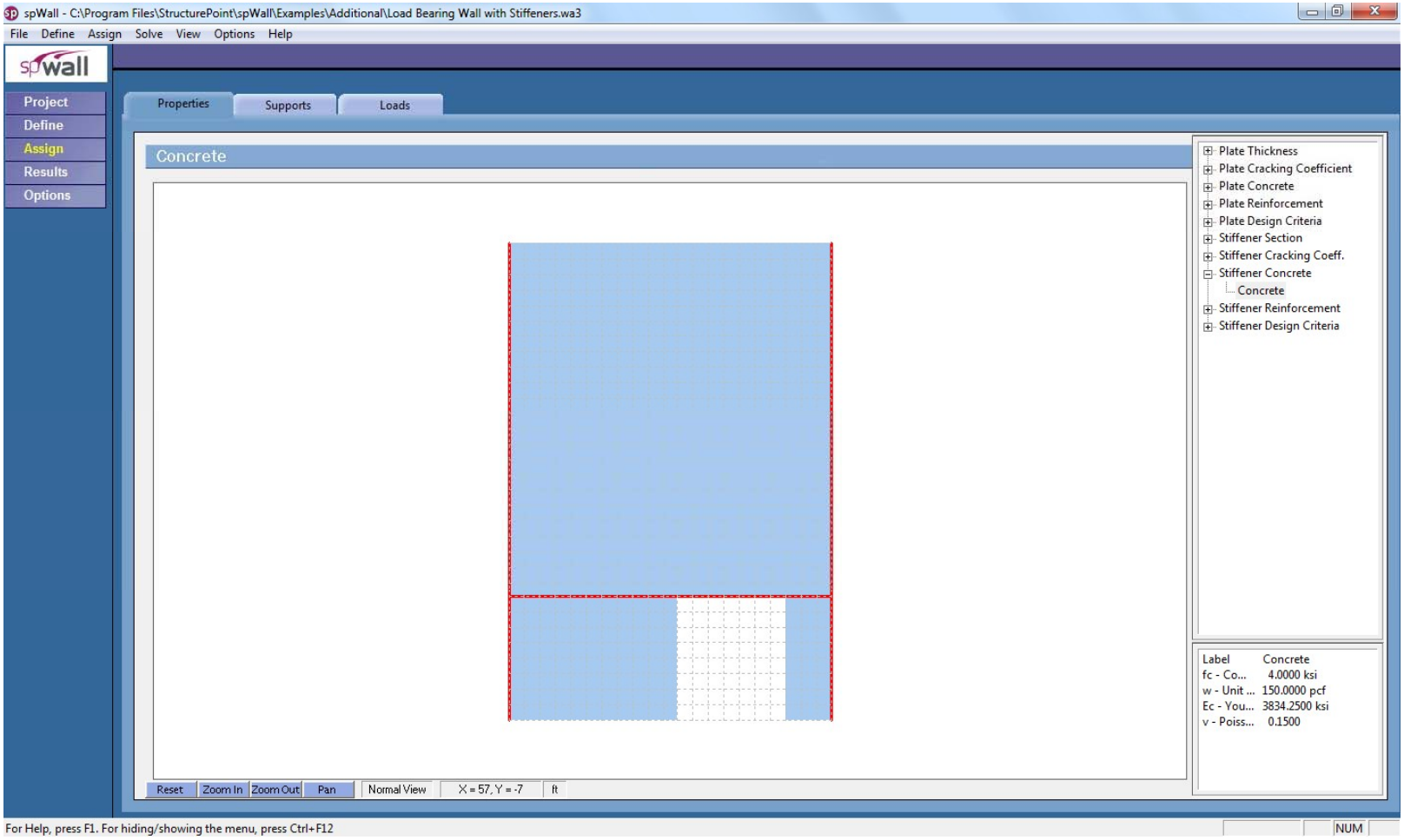

File Define Assign Solve View Options Help
spwall
Project
Define
Assign
Results
Options
View Results
View Wall Contours
View Stiffener Diagrams
Reports
View Contours
Dy
0.034
0.023
0.013
0.003
-0.007
-0.017
-0.028
-0.038
-0.048
-0.058
Y
Z
X
Reset
Zoom In
Zoom Out
Pan
Normal View
X=8, Y=36
ft
Envelope
Displacements
Dx (+ve)
Dx (-ve)
Dy (+ve)
Dy (-ve)
Dz (+ve)
Dz (-ve)
Plate flexure reinf.
As_x
As_y
Service combinations
Dx
S1
Dy
S1
Dz
Ultimate combinations
Nxx
U1
U2
Nyy
Nxy
Mxx
Myy
Mxy
Modified
NUM

Define

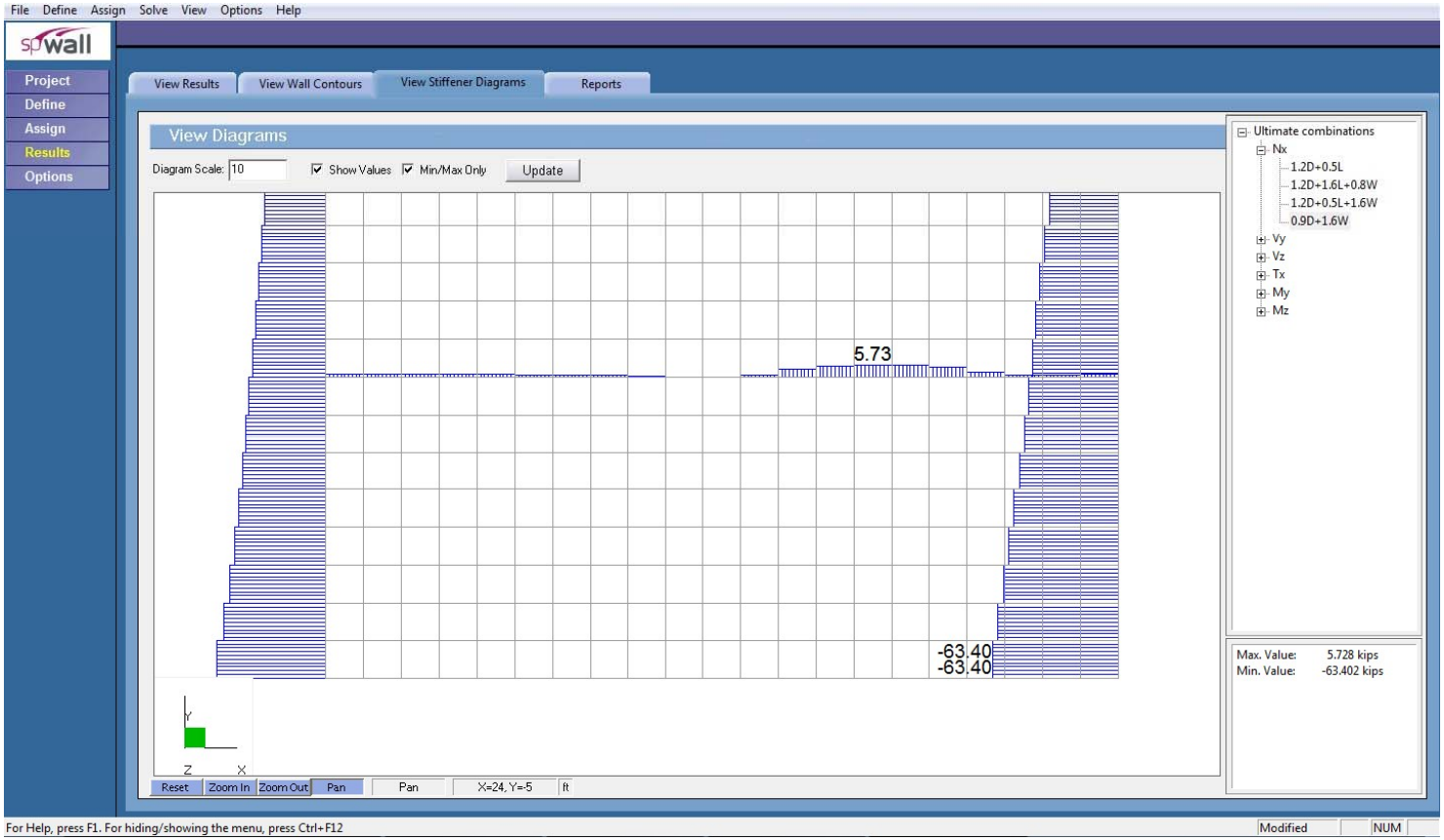

Project
Define
Assign
Results
Options
Properties
Supports
Loads
Load Combinations
Stiffener Section
Label:
beam
Section (in)
Type:
Rectangular
Width (in plane):
24
Height (out of plane):
30
Flange (in)
Projection:
At the middle
Left
Right
Width:
0
0
Thickness:
0
0
Label
Type
Projection
Width/Dia.
Height
Flange W-L
Flange T-L
beam
Rectangular
At the middle
24.00
30.00
0.00
0.00
Add
Delete
Modify
Plate Thickness
Stiffener Section
Plate Cracking Coefficient
Stiffener Cracking Coeff.
Concrete
Reinforcement
Plate Design Criteria
Stiffener Design Criteria


Project
Define
Assign
Results
Options
Properties
Supports
Loads
Load Combinations
Plate Cracking Coefficients
Label:
In plane:
Out of plane:
24wall
0.35
0.35
Label
In plane
Out of pl...
24wall
0.350
0.350
8wall
1.000
1.000
Add
Delete
Modify
Plate Thickness
Stiffener Section
Plate Cracking Coefficient
Stiffener Cracking Coeff.
Concrete
Reinforcement
Plate Design Criteria
Stiffener Design Criteria

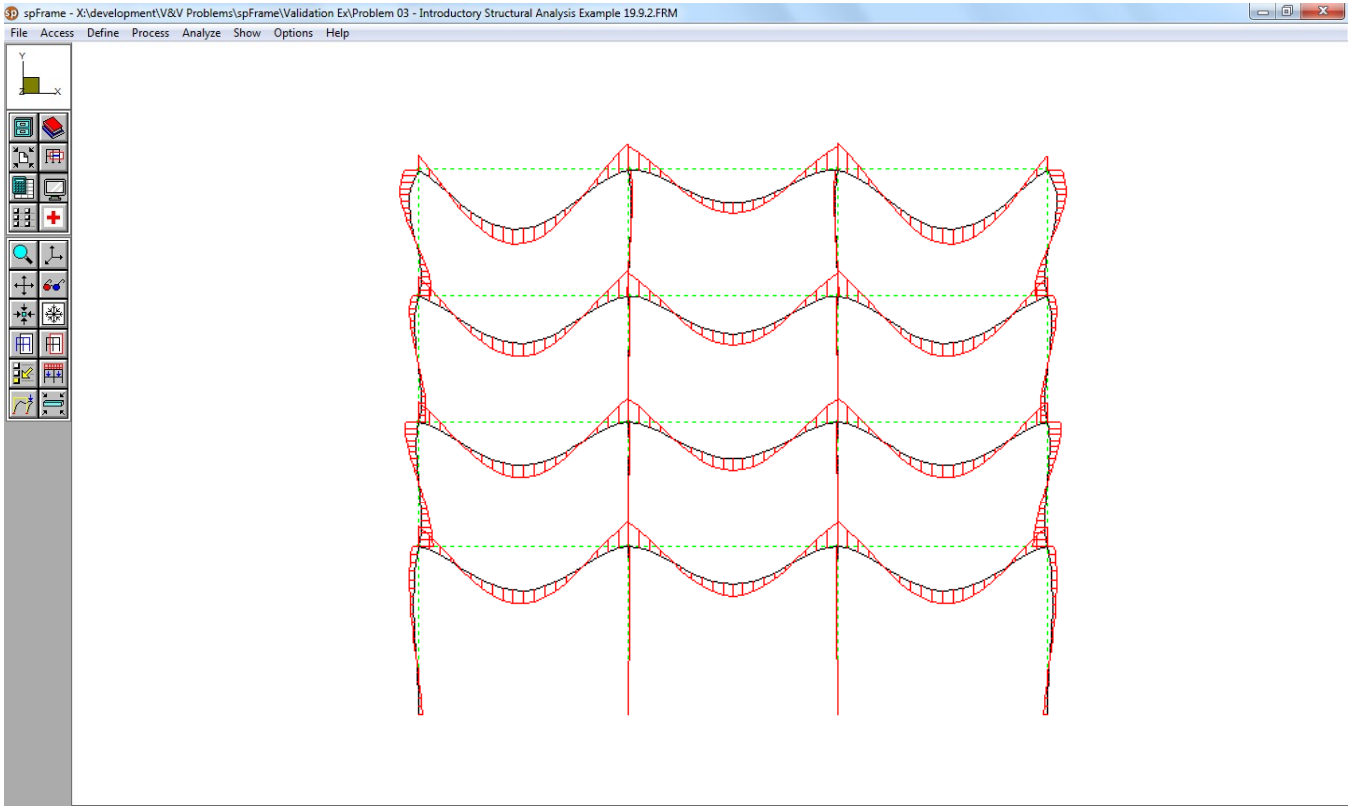
Assign


spWall - C:\Program Files\StructurePoint\spWall\Examples\Additional\Load Bearing Wall with Stiffeners.wa3
File Define Assign Solve View Options Help
spwall
Project
Define
Assign
Results
Options
Properties
Supports
Loads
Concrete
Plate Thickness
Plate Cracking Coefficient
Plate Concrete
Plate Reinforcement
Plate Design Criteria
Stiffener Section
Stiffener Cracking Coeff.
Stiffener Concrete
Concrete
Stiffener Reinforcement
Stiffener Design Criteria
Label Concrete
fc - Co... 4.0000 ksi
w - Unit ... 150.0000 pcf
Ec - You... 3834.2500 ksi
v - Poiss... 0.1500
Reset
Zoom In
Zoom Out
Pan
Normal View
X = 57, Y = -7
ft
For Help, press F1. For hiding/showing the menu, press Ctrl+F12
NUM

Solution

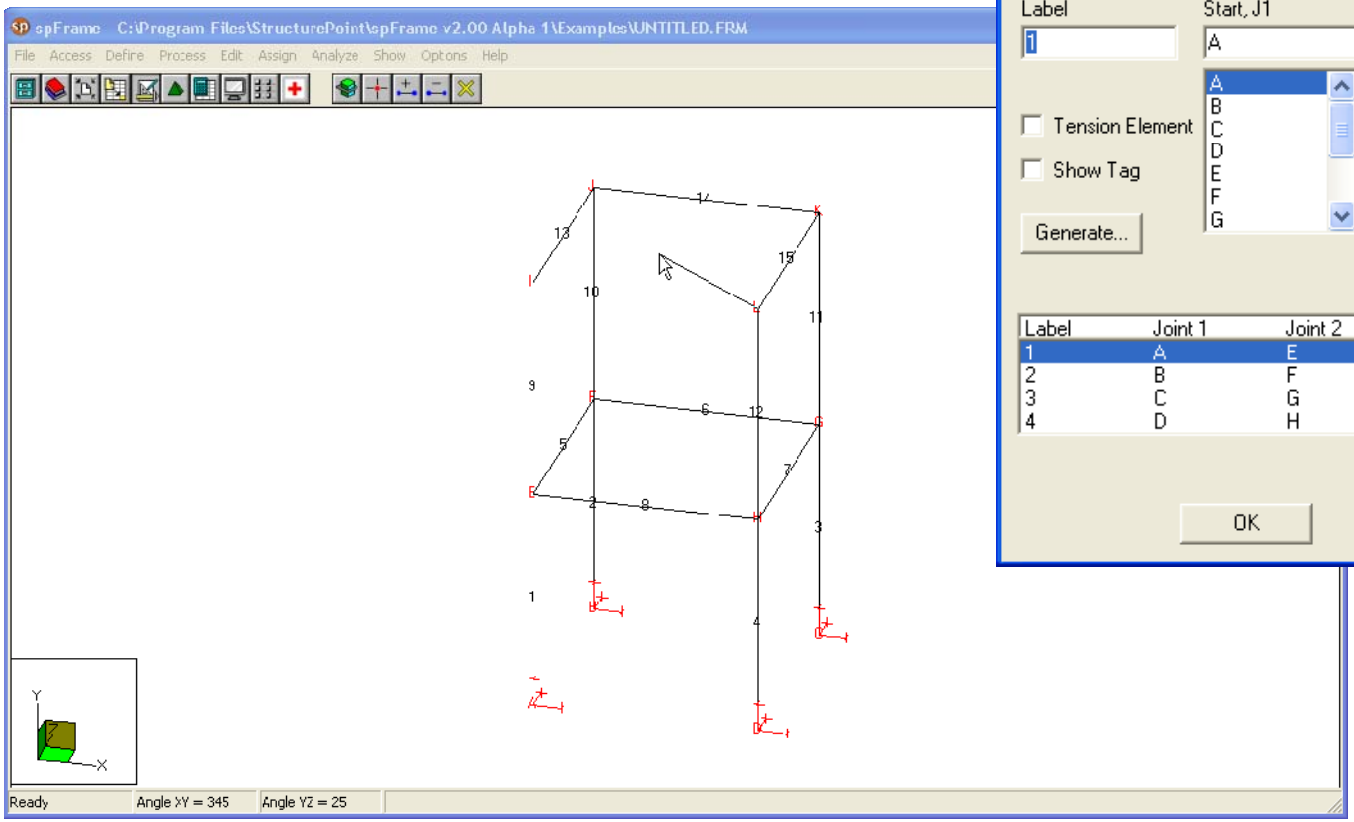

File Define Assign Solve View Options Help
spwall
Project
Define
Assign
Results
Options
View Results
View Wall Contours
View Stiffener Diagrams
Reports
View Diagrams
Diagram Scale: 10
Show Values
Min/Max Only
Update
5.73
-63.40
-63.40
Ultimate combinations
Nx
1.2D+0.5L
1.2D+1.6L+0.8W
1.2D+0.5L+1.6W
0.9D+1.6W
Vy
Vz
Tx
My
Mz
Max. Value: 5.728 kips
Min. Value: -63.402 kips
Reset
Zoom In
Zoom Out
Pan
Pan
X=24, Y=-5
ft
For Help, press F1. For hiding/showing the menu, press Ctrl+F12
Modified
NUM

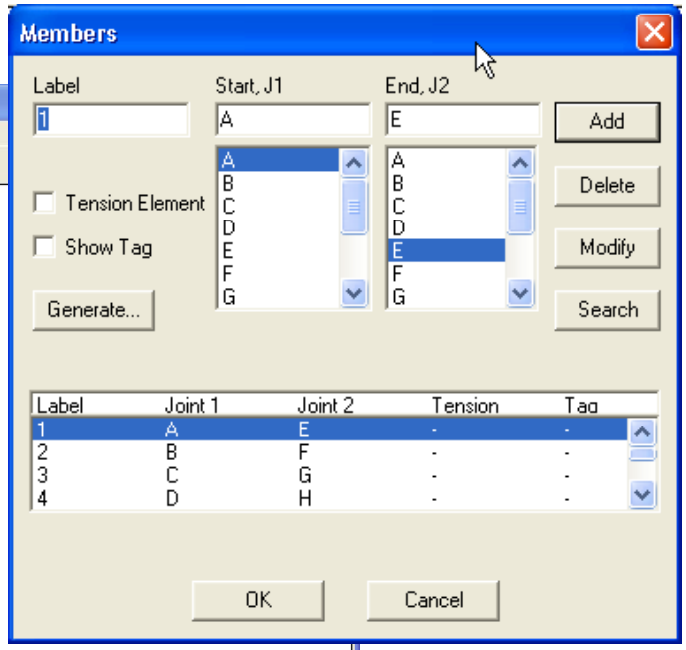
- General purpose structural analysis of 2-D and 3-D structures subject to static loads



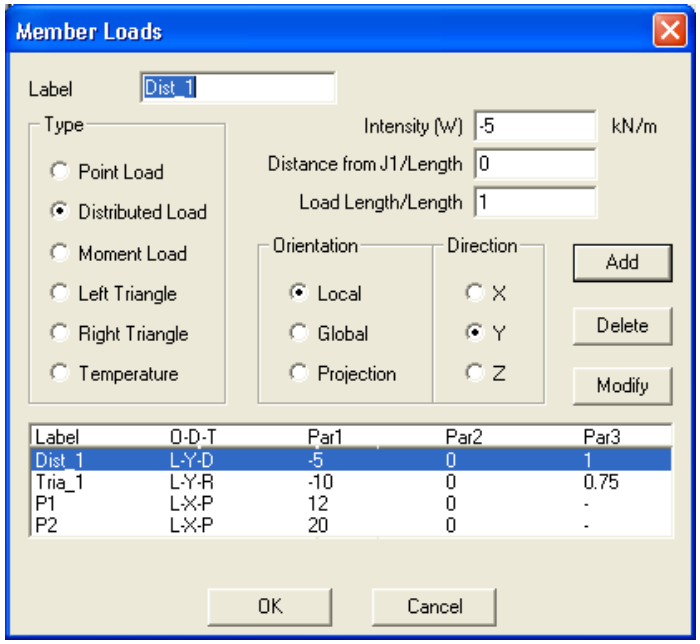
spframe

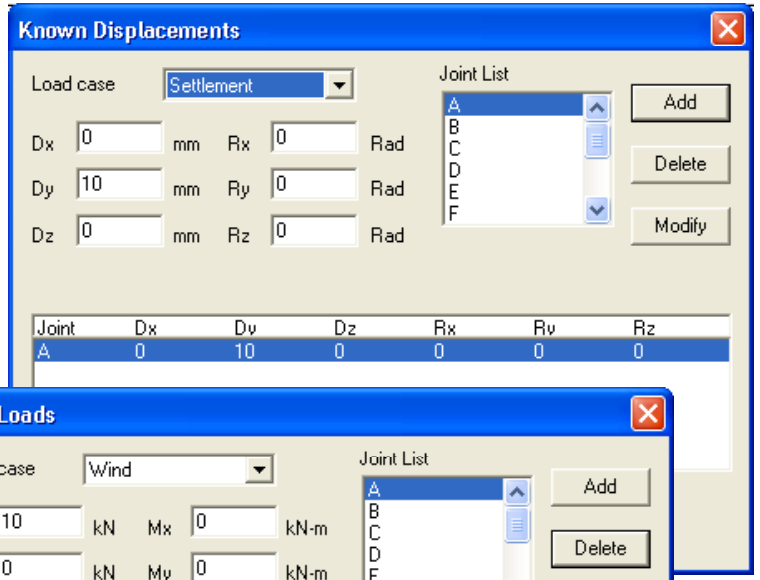
- Creating the Model

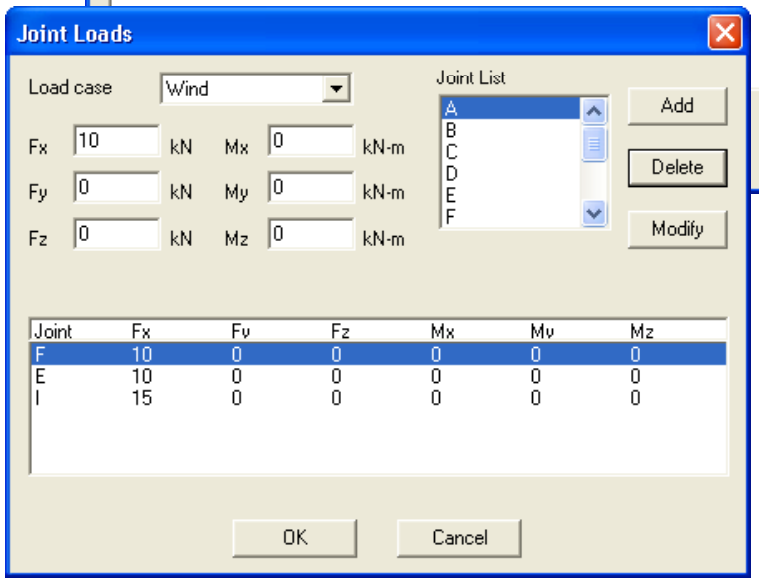




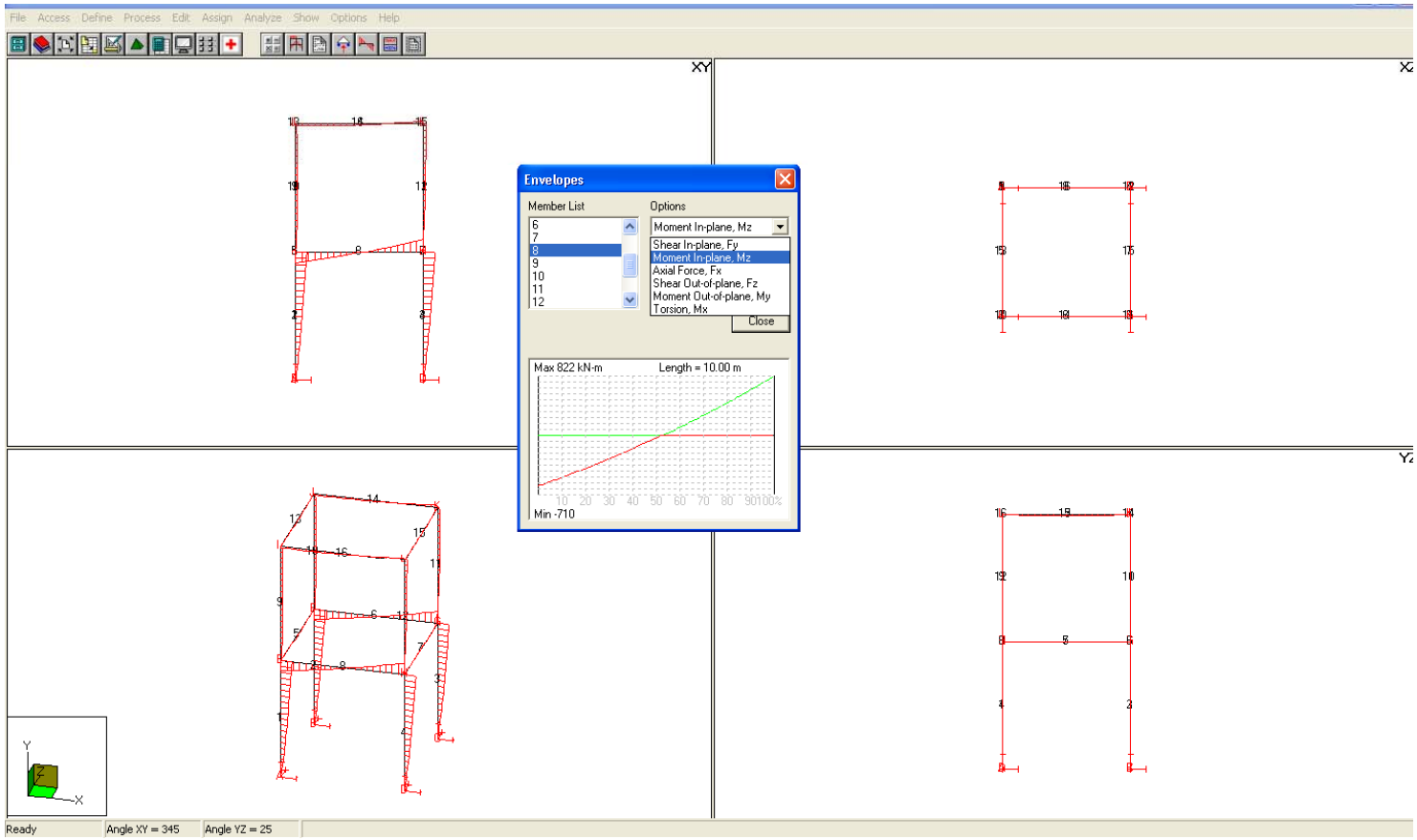
Applying the Forces







Viewing Results



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