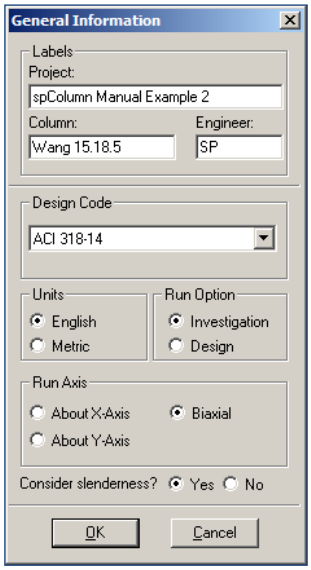
Example 1 – Investigation of a Slender Nonsway Column

Determine the adequacy of a 4" x 20" column[1] with 3-#11 bars on each 14" side in a nonsway frame with a clear height of 22'6". Use k=1.0.

The concrete used is 6000 psi and the reinforcing steel is 60,000 psi.

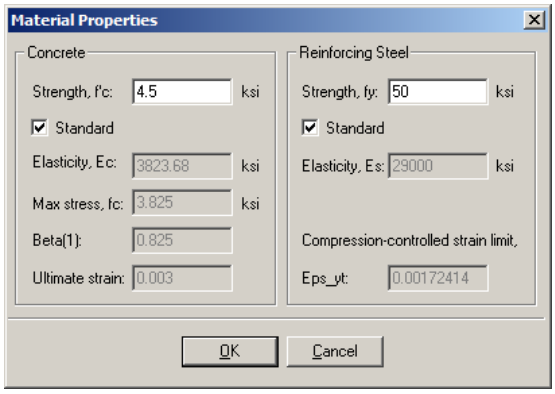
The factored load values for the column under consideration are as follows:

P (kip)	115 kips
Top M_{uy} (kip-ft)	279 ft-kips
Bottom M_{uy} (kip-ft)	-279 ft-kips



From the **File** menu, choose **New**. Any input data is cleared and the default values are restored.

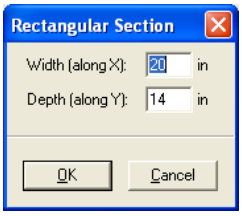
1. From the **Input** menu, choose **General Information**.
   - Input the PROJECT header.
   - Select ENGLISH units and ACI 318-14 code.
   - Select Biaxial for run axis, Investigation for run option and Yes for Consider Slenderness?
   - Choose OK.
2. From the **Input** menu, choose **Material Properties**.
   - Input `4.5` for the CONCRETE STRENGTH. Change the REINFORCING STEEL STRENGTH to `50`. Other properties are computed and will be accepted.
   - Choose Ok.

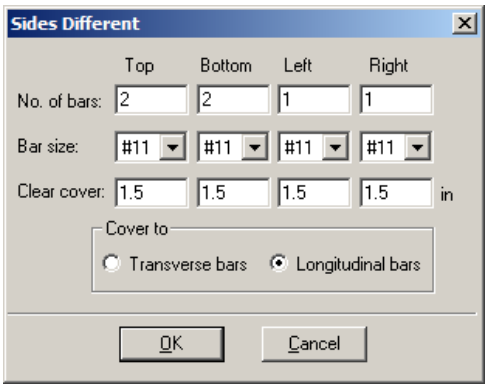


From the **Input** menu, choose **Section | Rectangular**.

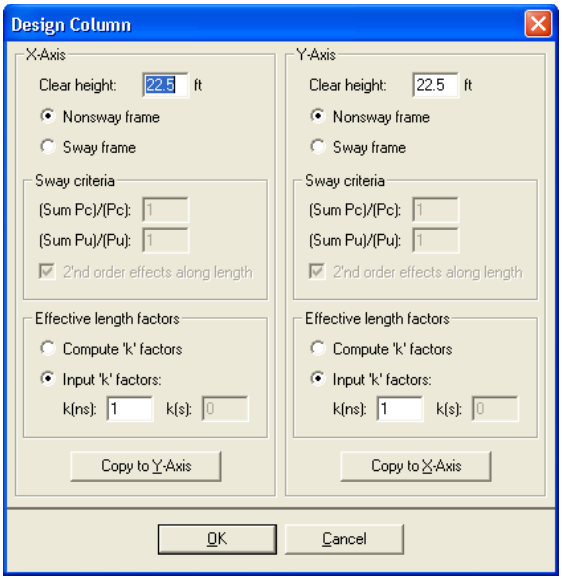
- Input `20` and `14` for the section width (along X) and depth (along Y).
- Choose OK.

[1] Based on Example 15.8.5 from Reinforced Concrete Design by Chu-Kia Wang, Charles G. Salmon, and Jose A. Pincheira, Seventh Edition, 2007, John Wiley and Sons, Inc.



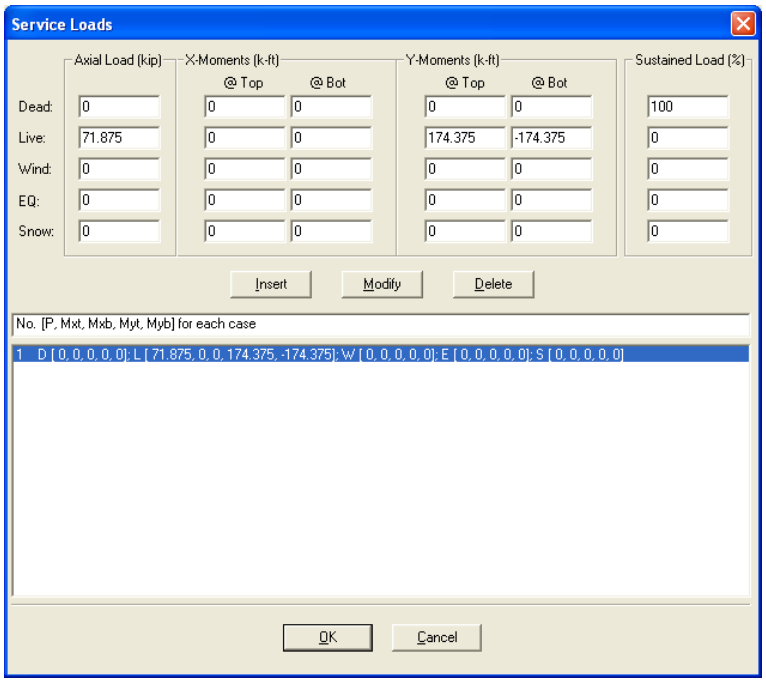


3. From the **Input** menu, choose **Reinforcement | Sides Different**.
   - Input `2-#11` bars for TOP and BOTTOM and `1-#11` for LEFT and RIGHT. Input `1.5` in for the cover and select LONGITUDINAL BARS.
   - Choose OK.
4. From the **Input** menu, choose **Slenderness | Design Column**.
   - Input `22.5` for the column CLEAR HEIGHT.
   - Check NONSWAY FRAME and select INPUT 'K' FACTORS.
   - Choose OK.



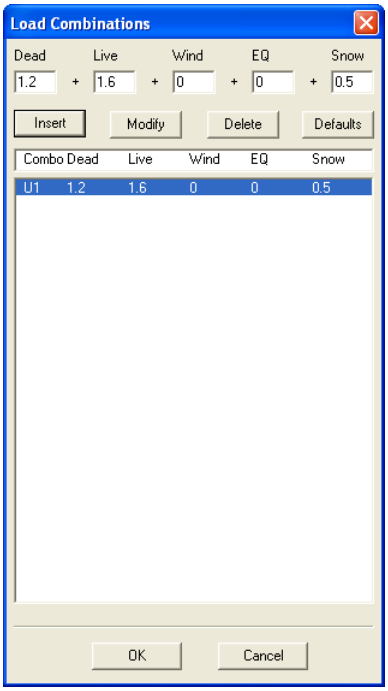
5. From the **Input** menu, choose **Loads | Service**.

   - Under LIVE, input `71.875` for the AXIAL LOAD, `0` for the X-MOMENTS @TOP, `0` for the X-MOMENTS @BOT, `174.375` for the Y-MOMENTS @TOP and `-174.375` for the Y-MOMENTS @BOTTOM, respectively.
   - In column SUSTAINED LOAD keep default setting for dead load equal 100%.
   - Choose INSERT to add the entry to the list box.
   - Choose OK .



6. From the **Input** menu, choose **Loads | Load Combinations**.

   - If the list displays thirteen combinations, choose only the second load combination U2 and delete all the others by selecting them and using DELETE. Choose OK.



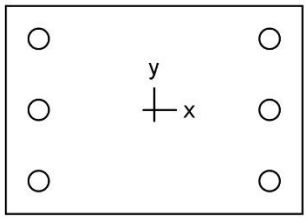
7. From the **Solve** menu, choose **Execute**.

   - The solver of the program is started and, upon completion, displays the interaction diagram of the section with the load point plotted within the diagram.

8. From the **View** menu, choose **Results**.

- Page through the results file.
- Choose FILE | EXIT to quit the spView program and get back to spColumn.

9. From the **File** menu, choose **Print Results**.
   - Select the printer to send the text results to.
   - Choose PRINT.
10. From the **File** menu, choose **Print Screen**.
    - Select the printer to send the graphical results to.
    - Choose PRINT.



20 x 14 in

Code: ACI 318-14

Units: English

Run axis: Biaxial

Run option: Investigation

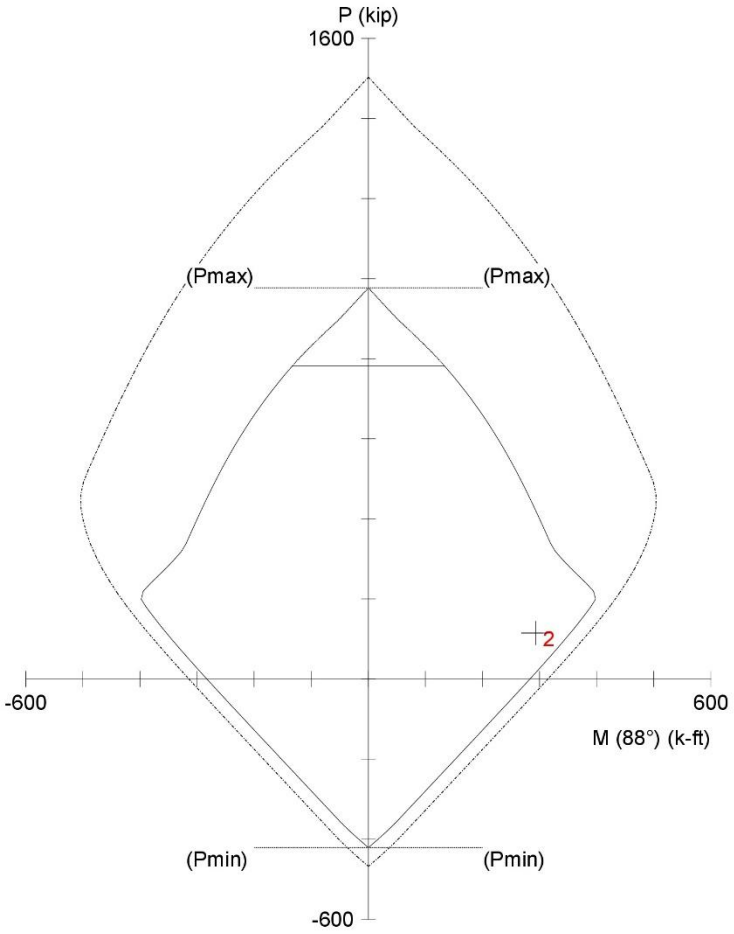
Slenderness: Considered

Column type: Structural

Bars: ASTM A615

Date: 10/25/16

Time: 10:15:33

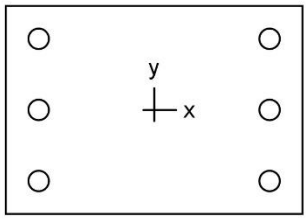


STRUCTUREPOINT - spColumn v5.50 (TM). Licensed to: StructurePoint. License ID: 00000-0000000-4-2A05D-2206F

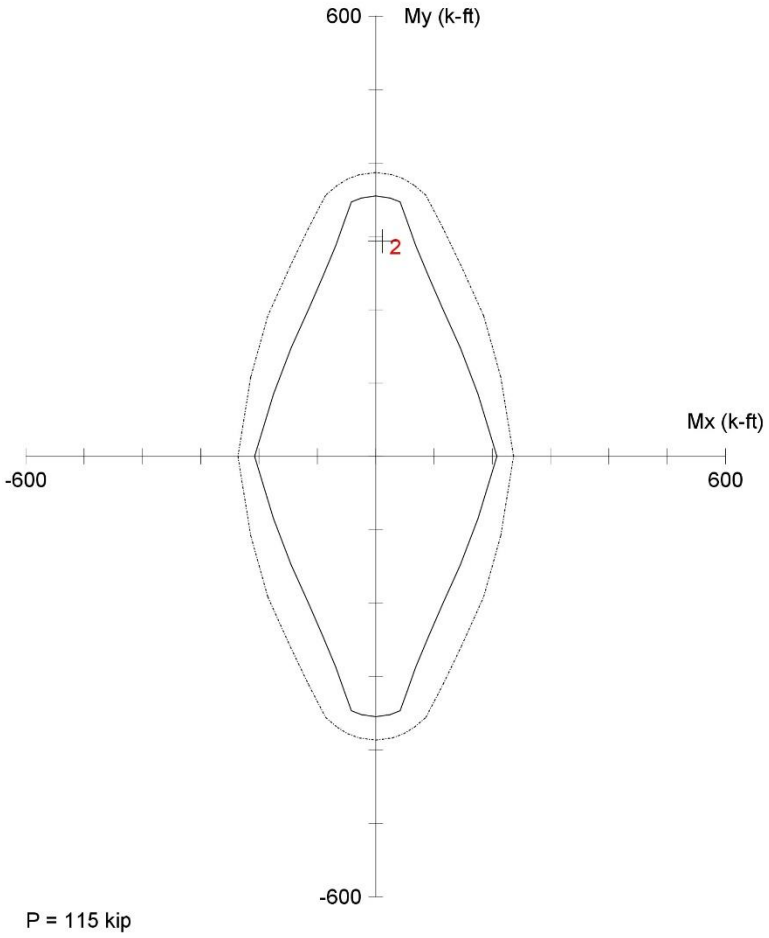
File: C:\Program Files (x86)\StructurePoint\spColumn\Examples\Examples-Manual\Example02.col

Project: spColumn Manual Example 2

Column: Wang 15.18.5		Engineer: SP	
f'c = 4.5 ksi	fy = 50 ksi	Ag = 280 in^2	6 #11 bars
Ec = 3824 ksi	Es = 29000 ksi	As = 9.36 in^2	rho = 3.34%
fc = 3.825 ksi	e_yt = 0.00172414 in/in	Xo = 0.00 in	Ix = 4573.33 in^4
e_u = 0.003 in/in		Yo = 0.00 in	Iy = 9333.33 in^4
Beta1 = 0.825		Min clear spacing = 3.39 in	Clear cover = 1.50 in
Confinement: Tied		kx(nonsway) = 1	kx(sway) = N/A
phi(a) = 0.8, phi(b) = 0.9, phi(c) = 0.65		ky(nonsway) = 1	ky(sway) = N/A



20 x 14 in



P = 115 kip

Code: ACI 318-14

Units: English

Run axis: Biaxial

Run option: Investigation

Slenderness: Considered

Column type: Structural

Bars: ASTM A615

Date: 10/25/16

Time: 10:17:48

STRUCTUREPOINT - spColumn v5.50 (TM). Licensed to: StructurePoint. License ID: 00000-0000000-4-2A05D-2206F

File: C:\Program Files (x86)\StructurePoint\spColumn\Examples\Examples-Manual\Example02.col

Project: spColumn Manual Example 2

Column: Wang 15.18.5 Engineer: SP

f'c = 4.5 ksi	fy = 50 ksi	Ag = 280 in^2	6 #11 bars
Ec = 3824 ksi	Es = 29000 ksi	As = 9.36 in^2	rho = 3.34%
fc = 3.825 ksi	e_yt = 0.00172414 in/in	Xo = 0.00 in	Ix = 4573.33 in^4
e_u = 0.003 in/in		Yo = 0.00 in	Iy = 9333.33 in^4
Beta1 = 0.825		Min clear spacing = 3.39 in	Clear cover = 1.50 in
Confinement: Tied		kx(nonsway) = 1	kx(sway) = N/A
phi(a) = 0.8, phi(b) = 0.9, phi(c) = 0.65		ky(nonsway) = 1	ky(sway) = N/A

General Information:
==========
File Name: C:\Program Files (x86)\StructurePoint\spColumn\Examples\Examples-Manual\Example02.col
Project: spColumn Manual Example 2
Column: Wang 15.18.5 Engineer: SP
Code: ACI 318-14 Units: English

Run Option: Investigation Slenderness: Considered
Run Axis: Biaxial Column Type: Structural

Material Properties:
==========
Concrete: Standard Steel: Standard
f'c = 4.5 ksi fy = 50 ksi
Ec = 3823.68 ksi Es = 29000 ksi
fc = 3.825 ksi Eps_yt = 0.00172414 in/in
Eps_u = 0.003 in/in
Beta1 = 0.825

Section:
==========
Rectangular: Width = 20 in Depth = 14 in

Gross section area, Ag = 280 in^2
Ix = 4573.33 in^4 Iy = 9333.33 in^4
rx = 4.04145 in ry = 5.7735 in
Xo = 0 in Yo = 0 in

Reinforcement:
==========
Bar Set: ASTM A615

Size	Diam (in)	Area (in^2)	Size	Diam (in)	Area (in^2)	Size	Diam (in)	Area (in^2)
# 3	0.38	0.11	# 4	0.50	0.20	# 5	0.63	0.31
# 6	0.75	0.44	# 7	0.88	0.60	# 8	1.00	0.79
# 9	1.13	1.00	# 10	1.27	1.27	# 11	1.41	1.56
# 14	1.69	2.25	# 18	2.26	4.00			

Confinement: Tied; #3 ties with #11 bars, #4 with larger bars.
phi(a) = 0.8, phi(b) = 0.9, phi(c) = 0.65

Layout: Rectangular
Pattern: Sides Different (Cover to longitudinal reinforcement)
Total steel area: As = 9.36 in^2 at rho = 3.34%
Minimum clear spacing = 3.39 in

	Top	Bottom	Left	Right
Bars	2 #11	2 #11	1 #11	1 #11
Cover(in)	1.5	1.5	1.5	1.5

Service Loads:
==========

Load No.	Case	Axial Load kip	Mx @ Top k-ft	Mx @ Bot k-ft	My @ Top k-ft	My @ Bot k-ft
1	Dead	0.00	0.00	0.00	0.00	0.00
	Live	71.88	0.00	0.00	174.38	-174.38
	Wind	0.00	0.00	0.00	0.00	0.00
	EQ	0.00	0.00	0.00	0.00	0.00
	Snow	0.00	0.00	0.00	0.00	0.00

Sustained Load Factors:
==========

Load Case	Factor (%)
Dead	100
Live	0
Wind	0
EQ	0
Snow	0

Load Combinations:
==========
U1 = 1.200*Dead + 1.600*Live + 0.000*Wind + 0.000*EarthQuake + 0.500*Snow

Slenderness:
============
Sway Criteria:

X-axis: Nonsway column.
Y-axis: Nonsway column.

Column	Axis	Height ft	Width in	Depth in	I in^4	f'c ksi	Ec ksi
Design	X	22.5	20	14	4573.33	4.5	3823.68
	Y	22.5	20	14	9333.33	4.5	3823.68
Above	X	(no column specified...)					
	Y	(no column specified...)					
Below	X	(no column specified...)					
	Y	(no column specified...)					

X-Beams Location	Length ft	Width in	Depth in	I in^4	f'c ksi	Ec ksi
Above Left	(no beam specified...)					
Above Right	(no beam specified...)					
Below Left	(no beam specified...)					
Below Right	(no beam specified...)					

Y-Beams Location	Length ft	Width in	Depth in	I in^4	f'c ksi	Ec ksi
Above Left	(no beam specified...)					
Above Right	(no beam specified...)					
Below Left	(no beam specified...)					
Below Right	(no beam specified...)					

Effective Length Factors:

Axis	Psi(top)	Psi(bot)	k(Nonsway)	k(Sway)	klu/r
X	0.000	0.000	1.000	(N/A)	66.81
Y	0.000	0.000	1.000	(N/A)	46.77

Moment Magnification Factors:
=============================
Stiffness reduction factor, phi(K) = 0.75
Cracked-section coefficients: cI(beams) = 0.35; cI(columns) = 0.7

0.2*Ec*Ig + Es*Ise (X-axis) = 7.66e+006 kip-in^2
0.2*Ec*Ig + Es*Ise (Y-axis) = 2.36e+007 kip-in^2

X-axis	At Ends					Along Length					
Ld/Comb	SumPu(kip)	Pc(kip)	SumPc(kip)	Betads	Deltas	Pu(kip)	k'lu/r	Pc(kip)	Betad	Cm	Delta
1 U1	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	115.00	(N/A)	1036.79	0.000	1.000	1.174

Y-axis	At Ends					Along Length					
Ld/Comb	SumPu(kip)	Pc(kip)	SumPc(kip)	Betads	Deltas	Pu(kip)	k'lu/r	Pc(kip)	Betad	Cm	Delta
1 U1	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	115.00	(N/A)	3199.27	0.000	1.000	1.050

Factored Moments due to First-Order and Second-Order Effects:
===
Minimum eccentricity, Ex,min = 1.02 in
Minimum eccentricity, Ey,min = 1.2 in

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

X-axis	1st Order					2nd Order		- Ratio -
Load Combo	Mns k-ft	Ms k-ft	Mu k-ft	Mmin k-ft		Mi k-ft	Mc k-ft	2nd/1st
1 U1	0.00	(N/A)	0.00	9.78	M1=	0.00	11.47	1.174
	-0.00	(N/A)	-0.00	9.78	M2=	-0.00	11.47	1.174

Y-axis	1st Order					2nd Order		- Ratio -
Load Combo	Mns k-ft	Ms k-ft	Mu k-ft	Mmin k-ft		Mi k-ft	Mc k-ft	2nd/1st
1 U1	279.00	(N/A)	279.00	11.50	M1=	279.00	293.04	1.050
	279.00	(N/A)	279.00	11.50	M2=	279.00	293.04	1.050

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	115.00	11.47	293.04	13.83	353.32	1.206	5.19	18.77	0.00810	0.900
2		115.00	11.47	293.04	13.83	353.32	1.206	5.19	18.77	0.00810	0.900

*** End of output ***

Example 2 – Design of a Slender Column in a Sway Frame

Design a square column[2] with a clear height of 16 ft. The column is sway and subjected to dead, live and wind loads as shown below.

	Dead	Live	Wind
P (kip)	380	140	0
Top M_x (kip-ft)	32	20	50
Bottom M_x (kip-ft)	54	36	50

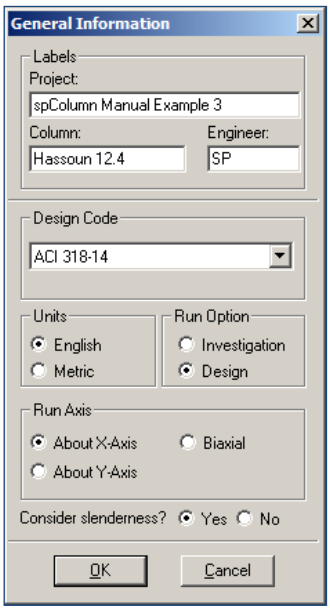
The column is to be checked for the following load combinations:

U1 = 1.2 D + 1.6 L

U2 = 1.2 D + 0.5 L + 1.6 W

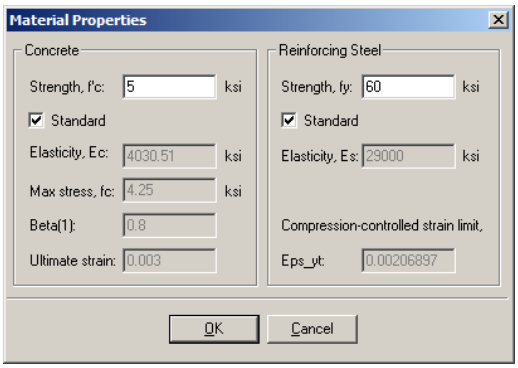
The calculations in the reference are done based on the load combination U2.

In practice, the ratio $\Sigma P_c / P_c$ would have to be calculated before the problem can be attempted, using a trial value of $\Sigma P_c/P_c$. Here, the value of $\Sigma P_c/P_c$ used is 28.67 based on the reference value of P_c. There are 14 interior columns, 18 exterior columns and 4 corner columns. Therefore, the value of $\Sigma P_u/P_u$ = 14 + 18 * 2/3 + 4 * 1/3 = 27.33 irrespective of the load combination being used.

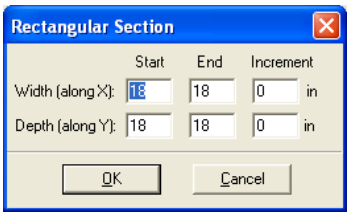


1. From the **File** menu, choose **New**. Any input data is cleared and the default values are restored.
2. From the **Input** menu, choose **General Information**.
   - Input the PROJECT header.
   - Select English units and ACI 318-14 code.
   - Select About X-Axis for run axis, Design for run option and Yes for Consider slenderness?
   - Choose OK.
3. From the **Input** menu, pick **Material Properties**.
   - Input 5 for the concrete strength. Other properties are computed and will be accepted.
   - Choose OK.

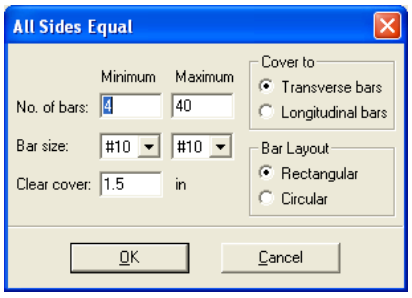
[2] Based on Example 12.4, pp 409, from Structural Concrete: Theory and Design by M. Nadim Hassoun and Akthem Al-Manaseer, Fourth Edition, 2008, John Wiley and Sons, Inc.



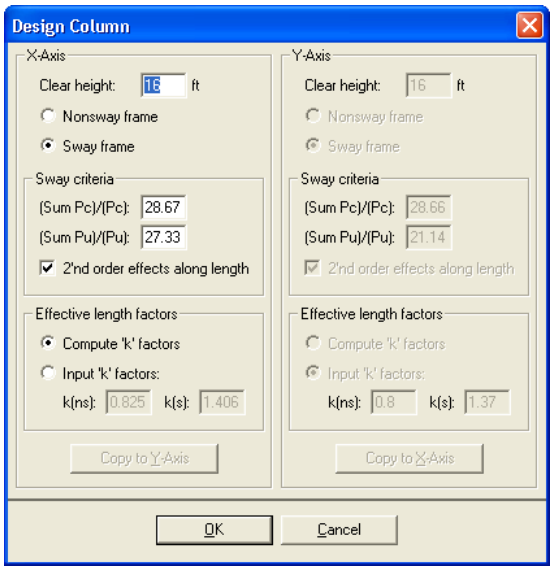
4. From the **Input** menu, pick **Section | Rectangular**.
   - Input `18` and `18` for the WIDTH (ALONG X) and DEPTH (ALONG Y) under both START and END options.
   - Choose OK.



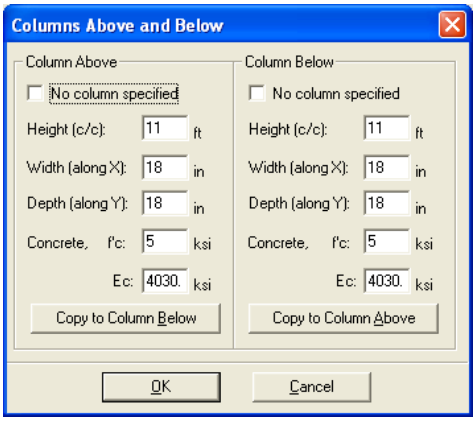
5. From the **Input** menu, choose **Reinforcement | All Sides Equal**
   - Input `4`-#`10` bars for Minimum, and 40-#10 bars for Maximum and `1.5` in for the cover, and select TRANSVERSE BARS and RECTANGULAR Bar Layout.
   - Choose OK.



6. From the **Input** menu, choose **Slenderness | Design Column.**
   - Input `16` for the column CLEAR HEIGHT.
   - Check SWAY FRAME
   - Under SWAY CRITERIA, input `28.67` and `27.33` for the ΣPc/Pc and ΣPu/Pu, respectively.
   - Leave 2ND ORDER EFFECT ALONG LENGTH option checked (default)
   - Select COMPUTE 'K' FACTORS.
   - Choose OK.

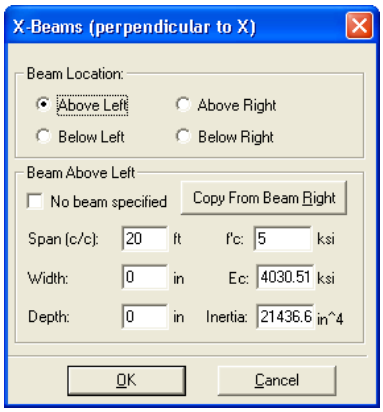


7. From the **Input** menu, choose **Slenderness | Columns Above/Below.**
   - Clear the NO COLUMN SPECIFIED option.
   - Input `11` for the column height (center-to-center) under HEIGHT (C/C) and leave the other data as is.
   - Choose Copy to Column Below.
   - Choose OK.

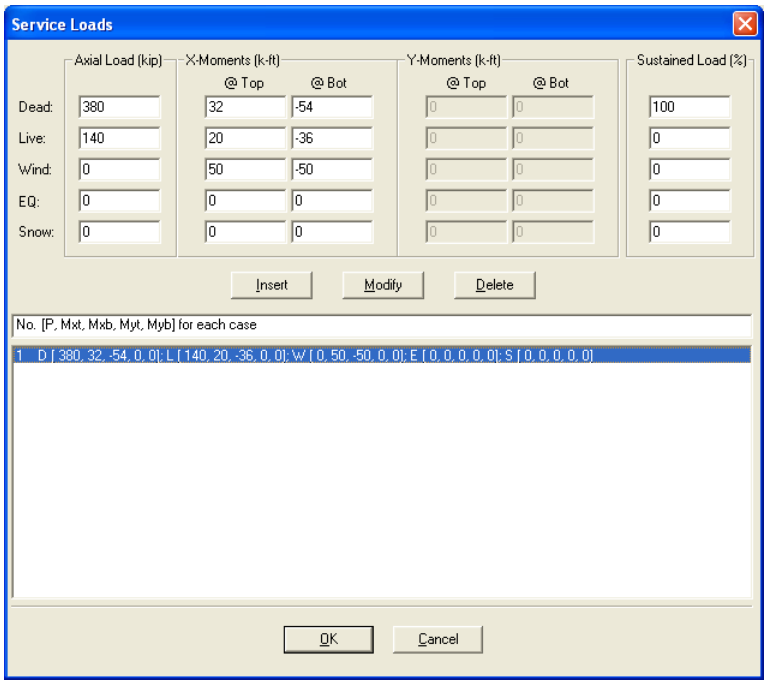


8. From the **Input** menu, choose **Slenderness | X-Beams.**
   - Choose ABOVE LEFT.
   - Clear the NO BEAM SPECIFIED option.
   - Input `20` for the span (center-to-center) under SPAN(C/C).
   - Input `0.00` and `0.00` for the WIDTH and DEPTH, respectively.
   - Input `21436.6` for the moment of inertia under INERTIA.
   - Leave the other data as it is.
   - Choose ABOVE RIGHT and click on COPY FROM BEAM LEFT.
   - Choose BELOW LEFT and click on COPY FROM BEAM ABOVE.

- Choose BELOW RIGHT and click on COPY FROM BEAM ABOVE.
- Choose OK.

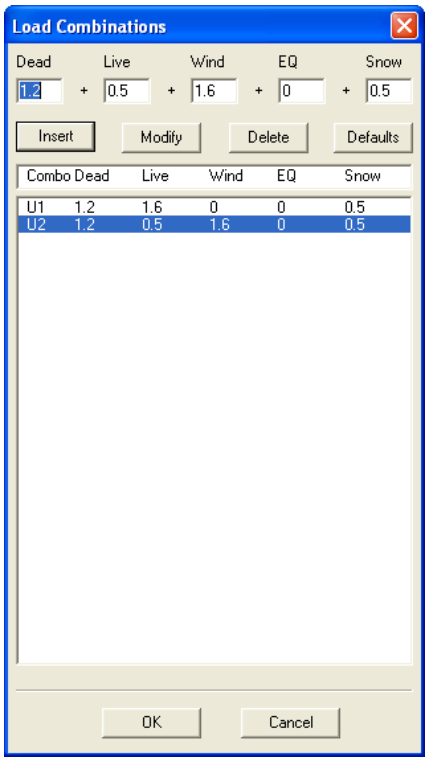


9. From the **Input** menu, choose **Loads | Service**.
   - Under DEAD, input `380`, `32` and `-54` for the AXIAL LOAD, X-MOMENTS and Y-MOMENTS respectively.
   - Under LIVE, input `140`, `20` and `-36` for the AXIAL LOAD, X-MOMENTS and Y-MOMENTS, respectively.
   - Under WIND, input `0`, `50` and `-50` for the AXIAL LOAD, X-MOMENTS and Y-MOMENTS, respectively.



   - Under SUSTAINED LOAD keep the default settings of 100% for dead and 0% for all other load cases.
   - Choose INSERT to add the entry to the list box.
   - Choose OK.
10. From the **Input** menu, choose **Loads | Load Combinations**.

- If the list displays thirteen combinations, leave the first and second as they are. Delete the remaining combinations using DELETE.



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    - Choose Exit to quit the spView program and get back to spColumn.
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    - Choose PRINT.
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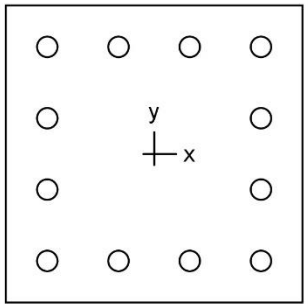
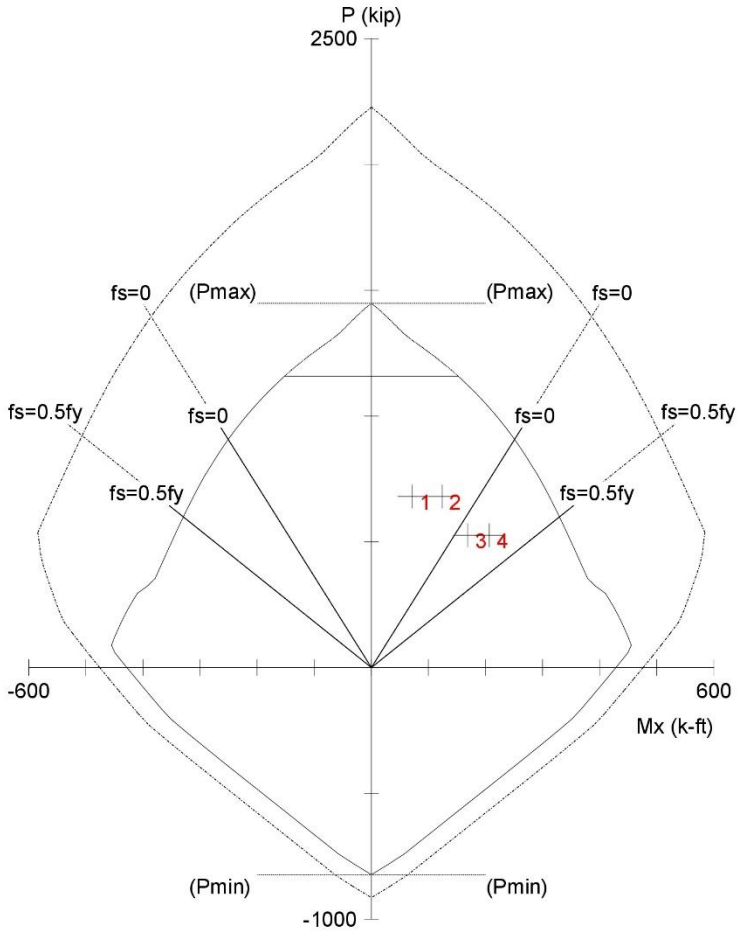
    - Choose PRINT.



18 x 18 in



Code: ACI 318-14

Units: English

Run axis: About X-axis

Run option: Design

Slenderness: Considered

Column type: Structural

Bars: ASTM A615

Date: 10/25/16

Time: 10:20:13

STRUCTUREPOINT - spColumn v5.50 (TM). Licensed to: StructurePoint. License ID: 00000-0000000-4-2A05D-2206F

File: C:\Program Files (x86)\StructurePoint\spColumn\Examples\Examples-Manual\Example03.col

Project: spColumn Manual Example 3

Column: Hassoun 12.4 — Engineer: SP

f'c = 5 ksi	fy = 60 ksi	Ag = 324 in^2	12 #10 bars
Ec = 4031 ksi	Es = 29000 ksi	As = 15.24 in^2	rho = 4.70%
fc = 4.25 ksi	e_yt = 0.00206897 in/in	Xo = 0.00 in	Ix = 8748 in^4
e_u = 0.003 in/in		Yo = 0.00 in	Iy = 8748 in^4
Beta1 = 0.8		Min clear spacing = 3.06 in	Clear cover = 1.88 in
Confinement: Tied		kx(nonsway) = 0.802212	kx(sway) = 1.38998

phi(a) = 0.8, phi(b) = 0.9, phi(c) = 0.65

General Information:
==========
File Name: C:\Program Files (x86)\StructurePoint\spColumn\Examples\Examples-Manual\Example03.col
Project: spColumn Manual Example 3
Column: Hassoun 12.4 Engineer: SP
Code: ACI 318-14 Units: English

Run Option: Design Slenderness: Considered
Run Axis: X-axis Column Type: Structural

Material Properties:
==========
Concrete: Standard Steel: Standard
f'c = 5 ksi fy = 60 ksi
Ec = 4030.51 ksi Es = 29000 ksi
fc = 4.25 ksi Eps_yt = 0.00206897 in/in
Eps_u = 0.003 in/in
Beta1 = 0.8

Section:
==========
Rectangular: Width = 18 in Depth = 18 in

Gross section area, Ag = 324 in^2
Ix = 8748 in^4 Iy = 8748 in^4
rx = 5.19615 in ry = 5.19615 in
Xo = 0 in Yo = 0 in

Reinforcement:
==========
Bar Set: ASTM A615

Size	Diam (in)	Area (in^2)	Size	Diam (in)	Area (in^2)	Size	Diam (in)	Area (in^2)
# 3	0.38	0.11	# 4	0.50	0.20	# 5	0.63	0.31
# 6	0.75	0.44	# 7	0.88	0.60	# 8	1.00	0.79
# 9	1.13	1.00	# 10	1.27	1.27	# 11	1.41	1.56
# 14	1.69	2.25	# 18	2.26	4.00			

Bar selection: Minimum number of bars
Asmin = 0.01 * Ag = 3.24 in^2, Asmax = 0.08 * Ag = 25.92 in^2

Confinement: Tied; #3 ties with #10 bars, #4 with larger bars.
phi(a) = 0.8, phi(b) = 0.9, phi(c) = 0.65

Layout: Rectangular
Pattern: All Sides Equal (Cover to transverse reinforcement)
Total steel area: As = 15.24 in^2 at rho = 4.70%
Minimum clear spacing = 3.06 in

12 #10 Cover = 1.5 in

Service Loads:
==========

No.	Load Case	Axial Load kip	Mx @ Top k-ft	Mx @ Bot k-ft	My @ Top k-ft	My @ Bot k-ft
1	Dead	380.00	32.00	-54.00	0.00	0.00
	Live	140.00	20.00	-36.00	0.00	0.00
	Wind	0.00	50.00	-50.00	0.00	0.00
	EQ	0.00	0.00	0.00	0.00	0.00
	Snow	0.00	0.00	0.00	0.00	0.00

Sustained Load Factors:
==========

Load Case	Factor (%)
Dead	100
Live	0
Wind	0
EQ	0
Snow	0

Load Combinations:
==========
U1 = 1.200*Dead + 1.600*Live + 0.000*Wind + 0.000*EarthQuake + 0.500*Snow
U2 = 1.200*Dead + 0.500*Live + 1.600*Wind + 0.000*EarthQuake + 0.500*Snow

Slenderness:
============
Sway Criteria:

X-axis: Sway column. SumPc = 28.67 * Pc SumPu = 27.33 * Pu
Second-order effects along length considered

Column	Axis	Height ft	Width in	Depth in	I in^4	f'c ksi	Ec ksi
Design	X	16	18	18	8748	5	4030.51
Above	X	11	18	18	8748	5	4030.51
Below	X	11	18	18	8748	5	4030.51

X-Beams Location	Length ft	Width in	Depth in	I in^4	f'c ksi	Ec ksi
Above Left	20	0	0	21436.6	5	4030.51
Above Right	20	0.0001	0.0001	21436.6	5	4030.51
Below Left	20	0.0001	0.0001	21436.6	5	4030.51
Below Right	20	0.0001	0.0001	21436.6	5	4030.51

Effective Length Factors:

Axis	Psi(top)	Psi(bot)	k(Nonsway)	k(Sway)	klu/r
X	1.252	1.252	0.802	1.390	51.36

Moment Magnification Factors:
=============================
Stiffness reduction factor, phi(K) = 0.75
Cracked-section coefficients: cI(beams) = 0.35; cI(columns) = 0.7

0.2*Ec*Ig + Es*Ise (X-axis) = 2.02e+007 kip-in^2

X-axis Ld/Comb	SumPu(kip)	At Ends Pc(kip)	SumPc(kip)	Betads	Deltas	Along Length Pu(kip)	k'lu/r	Pc(kip)	Betad	Cm	Delta
1 U1	18584.40	2792.45	80059.54	0.000	1.448	680.00	(N/A)	5018.30	0.671	0.830	1.013
U2	14375.58	2792.45	80059.54	0.000	1.315	526.00	(N/A)	4490.56	0.867	0.927	1.098

Factored Moments due to First-Order and Second-Order Effects:
===
Minimum eccentricity, Ex,min = 1.14 in

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

X-axis Load Combo	1st Order Mns k-ft	Ms k-ft	Mu k-ft	Mmin k-ft		2nd Order Mi k-ft	Mc k-ft	- Ratio - 2nd/1st
1 U1	70.40	0.00	70.40	64.60	M1=	70.40	71.32	1.013
	122.40	-0.00	122.40	64.60	M2=	122.40	124.00	1.013
1 U2	48.40	80.00	128.40	49.97	M1=	153.58	168.69	1.314
	82.80	80.00	162.80	49.97	M2=	187.98	206.47	1.268

Factored Loads and Moments with Corresponding Capacities:
==
Design/Required ratio PhiMn/Mu >= 1.00
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	PhiMnx k-ft	PhiMn/Mu	NA depth in	Dt depth in	eps_t	Phi
1	1 U1	680.00	71.32	311.55	4.368	12.43	15.49	0.00074	0.650
2		680.00	124.00	311.55	2.512	12.43	15.49	0.00074	0.650
3	1 U2	526.00	168.69	344.47	2.042	10.76	15.49	0.00132	0.650
4		526.00	206.47	344.47	1.668	10.76	15.49	0.00132	0.650

*** End of output ***