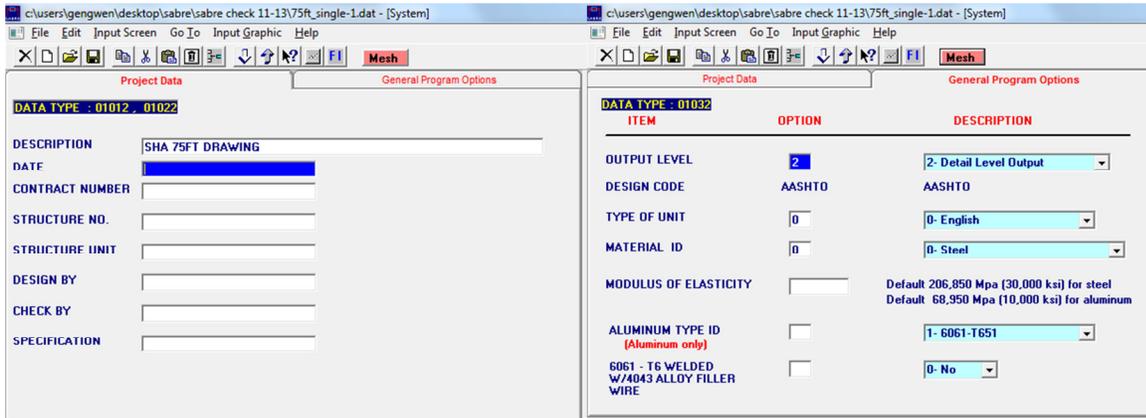


Appendix E – Tutorial for one, two and three – arm signal poles

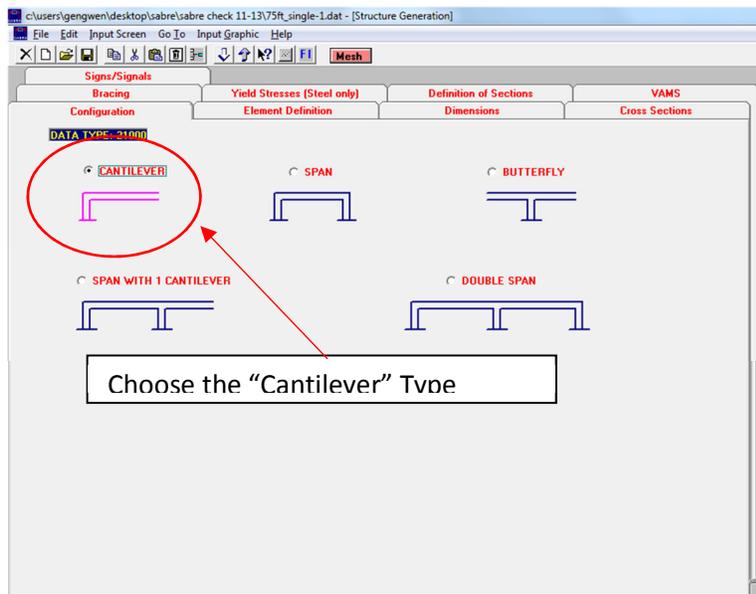
This appendix is aiming at providing examples for users' inputting data of mast-arm signal pole structure with single arm, twin arms spaced at 90° and 180°, and triple arms. For detailed input of the 4 examples, please open the attached data files with Sabre (75ft_single-1.dat, 75ft_twin-2@90degree.dat, 75ft_twin-2@180degree.data, 75ft_triple-3@90degree.data)

1. Single arm

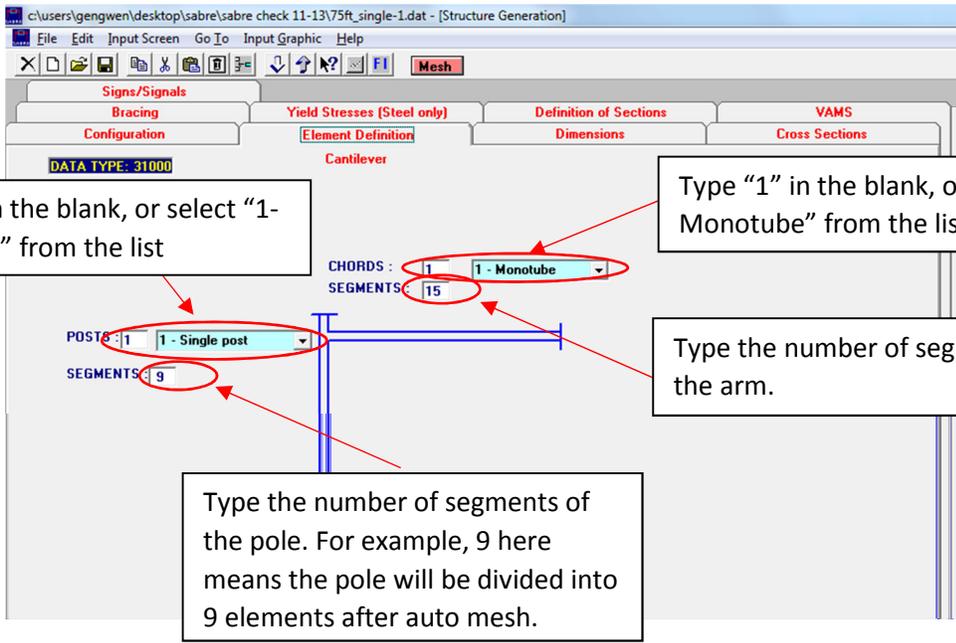
1) Input project data and program options based on the requirement



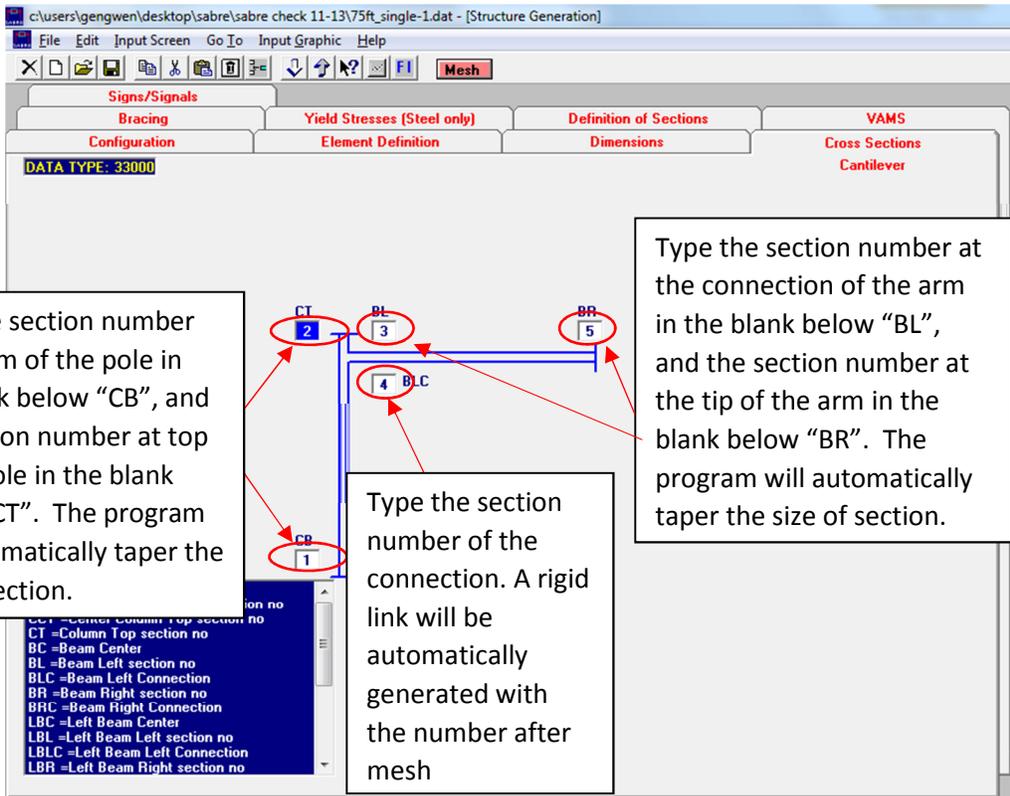
2) Configuration (Data Type: 21000)



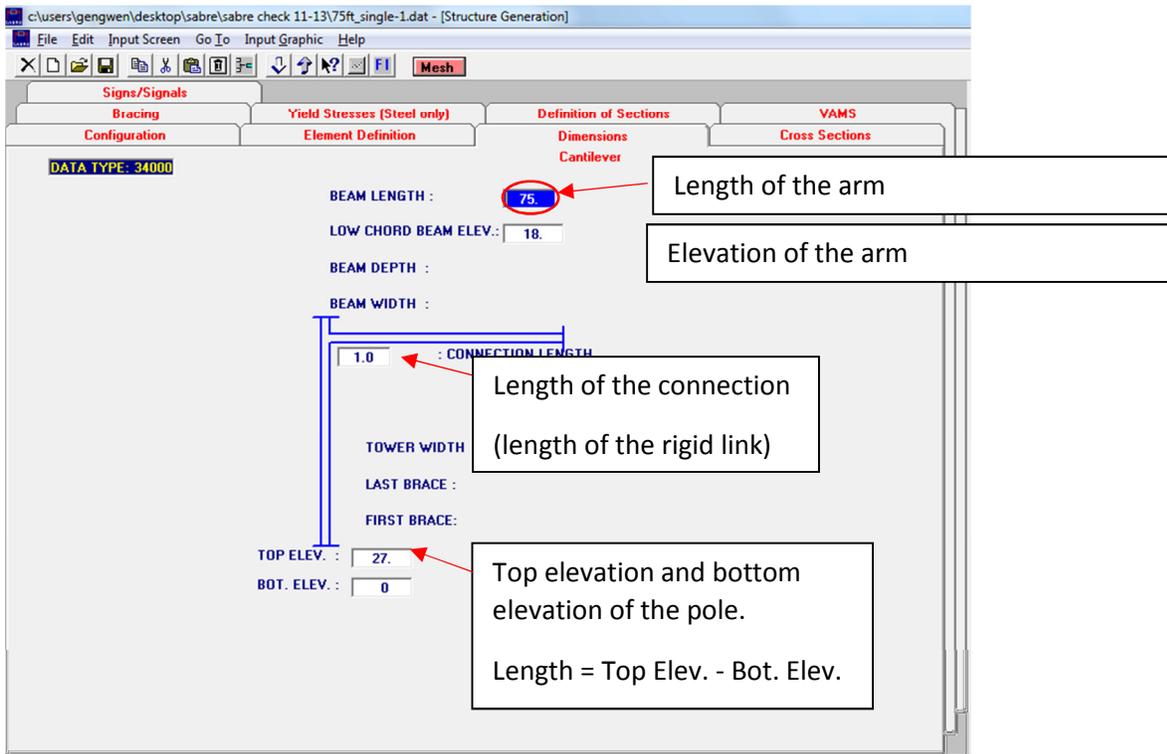
3) Element Definition (Data Type: 31000)



4) Cross section (Data Type: 33000)



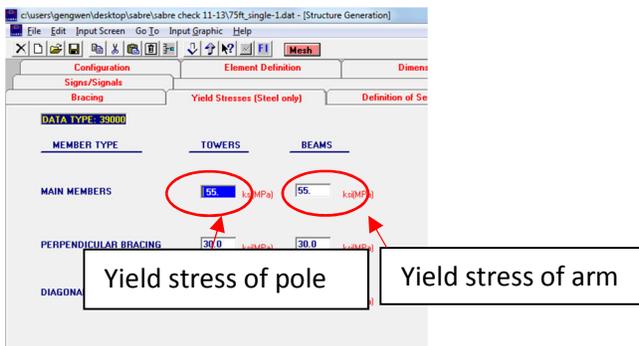
5) Dimensions (Data Type: 34000)



6) Bracing Cantilever (Date Type: 38000)

No input

7) Yield Stress (Data Type: 39000)



8) Definition of section (Data Type: 04012)

Input section size corresponding to each section number

Section Lookup

Sec No	Standard Section		Tubular Shapes			General Sections								
	ID	DTH inch (mm)	WT/FT (Lb./ft)	ID	OUT D inch (mm)	Tw inch (mm)	Kt	ID	WT/FT Kip/ft (KN/m)	S1 inch (mm)	S2 inch (mm)	S3 inch (mm)	S4 inch (mm)	S5 inch (mm)
1				2	18.5	0.313	1.0							
2				2	14.72	0.313	1.0							
3				2	16.	0.313	1.0							
4				999	0	0	1.0							
5				2	11.10	0.313	1.0							
6	W	4	3					9	0.003	4.060	4.160	0.345		0.280
7				2	11.48	0.188	1.0							
8				2	7.76	0.188	1.0							
9				2	8.14	0.188	1.0							
10				2	5.83	0.188	1.0							
11														
12														
13														
14														

Click on SECTION LOOKUP to select a shape file first. Then use the scroll bar to view the selected file. Click on the desired data to import the section data.

9) VAMS (Data Type: 07012): member to connect signs and arms

VAMS

VAM ID	sect	Top VAM Coords			Length feet (m)	Supporting Members *			Attached Sign Units			Walkway Units		
		X feet (m)	Y feet (m)	Z feet (m)		No.	No.	No.	No.	No.	No.	No.	No.	No.
1	6	25.7	20.	0.25	4.	17			1					
2	6	34.28	18.667	0.25	1.333	18			2					
3	6	42.85	20.	0.25	4.	20			3					
4	6	50.35	20.	0.25	4.	22			4					
5	6	57.85	20.	0.25	4.	23			5					
6	6	64.28	19.25	0.25	2.5	24			6					
7	6	69.64	20.	0.25	4.	25			7					
8	6	73.92	19.25	0.25	2.5	26			8					
9														
10														
11														
12														
13														
14														
15														
16														
17														
18														
19														
20														
21														
22														
23														
24														
25														
26														

* Supporting Members are generated by Mesh.

10) Sign/Signals (Data Type: 09012)

The program will treat signs and signals as cube.

Click "Mesh" after this step

The coordinate of the left bottom point of the sign/signal

The value is the equivalent density for each signal: Equivalent density = Mass / (Width*Height*Thickness)

Sign No.	Width feet (m)	Height feet (m)	Thick. inch (mm)	Slope in/R (mm/m)	Density K70 (Kg/m ³)	X feet (m)	Y feet (m)	Z feet (m)	Optional Cd
1	2.005	4.23	4.09	0	0.019	24.64	15.885	0.6	
2	8.	1.333	0.1	0	0.168	0.	17.333	0.6	
3	2.005	4.23	4.09	0	0.019	41.78	15.885	0.6	
4	2.005	4.23	4.09	0	0.019	49.28	15.885	0.6	
5	2.005	4.23	4.09	0	0.019	56.78	15.885	0.6	
6	3.	2.5	0.1	0	0.168	62.67	16.75	0.6	
7	2.005	4.23	4.09	0	0.019	68.57	15.885	0.6	
8	3.	2.5	0.1	0	0.168	72.92	16.75	0.6	

11) Definition of Joints (Data Type: 03012)

The table of joints will be automatically generated after mesh

Remember to check elements and joints by click this icon

JNT No	Coordinates			Supp. Translation			Supp.		
	X ft(m)	Y ft(m)	Z ft(m)	X	Y	Z	XX	YY	ZZ
1	0.00	0.00	0.00	1	1	1	1	1	1
2	0.00	2.	0.00						
3	0.00	4.	0.00						
4	0.00	6.	0.00						
5	0.00	8.	0.00						
6	0.00	10.	0.00						
7	0.00	12.	0.00						
8	0.00	14.	0.00						
9	0.00	16.	0.00						
10	0.00	18.	0.00						
11	0.00	27.	0.00						
12	1.	18.	0.00						
13	5.93	18.	0.00						
14	10.87	18.	0.00						
15	15.8	18.	0.00						
16	20.73	18.	0.00						
17	25.67	18.	0.00						
18	30.6	18.	0.00						
19	35.53	18.	0.00						

12) Definition of Members (Data Type: 05012)

This table will be automatically generated after mesh

DATA TYPE - 05012

Mem. No.	Sect. From	Sect. To	Joints From	Joints To	Angle Degree	Unit No.	Unit Type	Mat'l Yield ksi(MPa)	Mem. Type	Stress
1	1		1	2		1	3	55		
2			2	3		1	3	55		
3			3	4		1	3	55		
4			4	5		1	3	55		
5			5	6		1	3	55		
6			6	7		1	3	55		
7			7	8		1	3	55		
8			8	9		1	3	55		
9			9	10		1	3	55		
10		2	10	11		1	3	55		
11	4	4	10	12		2	2	55		
12	3		12	13		2	2	55		
13			13	14		2	2	55		
14			14	15		2	2	55		
15			15	16		2	2	55		
16			16	17		2	2	55		
17			17	18		2	2	55		
18			18	19		2	2	55		
19			19	20		2	2	55		
20			20	21		3	2	55		
21			21	22		3	2	55		
22			22	23		3	2	55		

Note: If user specifies his own members please

- 1) Use one "prismatic" or "tapered" section within one unit.
- 2) Maximum unit number is 40. User may define multiple units within one unit type.
- 3) Only 4 unit types are allowed: (1) chord interior truss, (2) exterior truss - main chord members, (3) tower - main vertical members, (4) tower truss
- 4) If member types are blank, fixed-end members are assumed.

13) Wind parameters (Data Type: 01042)

Please input factors based on the code.

14) Additional joint load (Data Type: 01042) and walkway (Data type 08012)

Input other specific load here if needed.

15) Connections (Data Type: 01052), height coefficient (Data Type: 09112) and Hinges (Data Type: 40000)

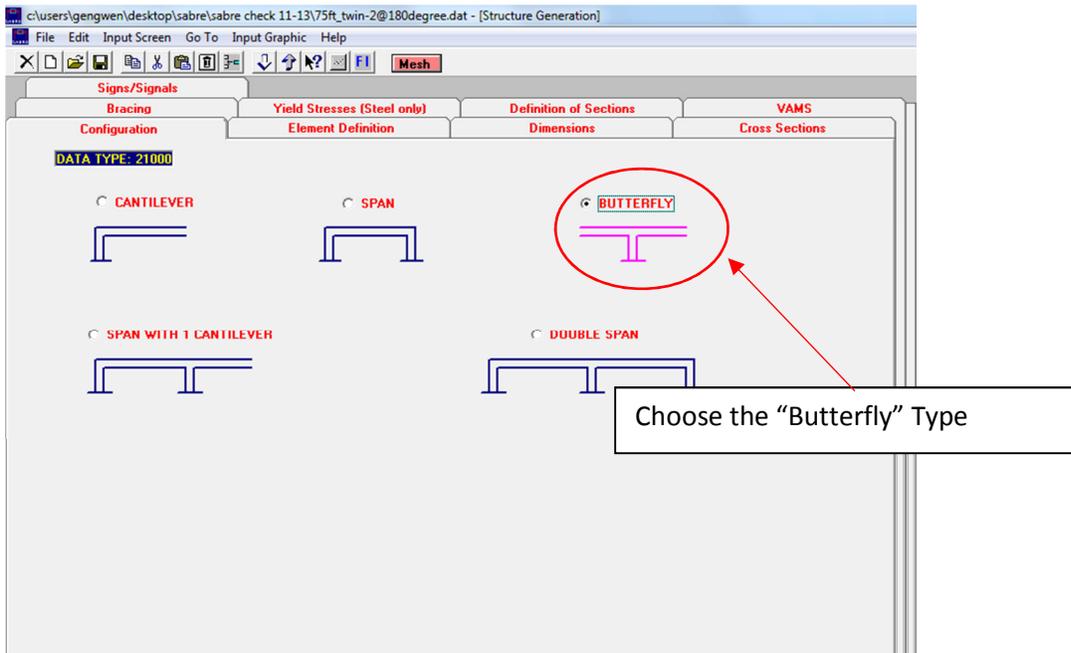
Leave default value here.

2. Twin arms spaced at 180°

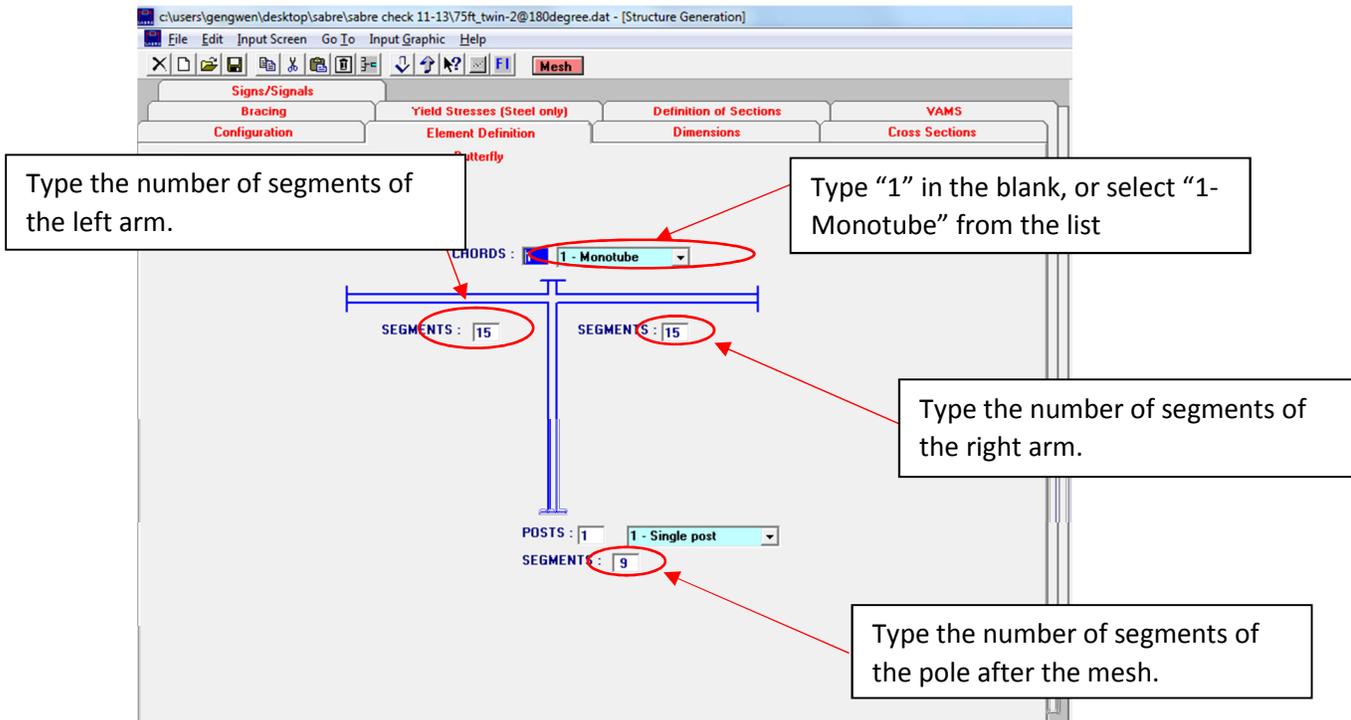
1) Input project data and program options based on the requirement

Follow step 1 of single arm

2) Configuration (Data Type: 21000)



3) Element Definition (Data Type: 31000)



4) Cross section (Data Type: 33000)

Type the section number at the connection of the left arm in the blank below "LBR", and the section number at the tip of the arm in the blank below "LBL". The program will automatically taper the size of section.

Type the section number at the connection of the right arm in the blank below "RBL", and the section number at the tip of the arm in the blank below "RBR". The program will automatically taper the size of section.

Type the section number at bottom of the pole in the blank below "CB", and the section number at top of the pole in the blank below "CT".

Type the section number of the connection. "LBRC" is for the left arm. "RBRC" is for the right arm.

5) Dimensions (Data Type: 34000)

BEAM LENGTH : 75

LOW CHORD BEAM ELEV. : 18

BEAM DEPTH :

BEAM WIDTH :

CONNECTION LENGTH : 1.0

TOWER WIDTH :

LAST BRACE :

FIRST BRACE :

TOP ELEV. : 27

BOT. ELEV. : 0

DATA TYPE: 34000

6) Bracing Cantilever (Date Type: 38000)

No input

7) Yield Stress (Data Type: 39000)

Follow step 7 of single arm

8) Definition of section (Data Type: 04012)

Follow step 8 of single arm

9) VAMS (Data Type: 07012): member to connect signs and arms

Configuration		Element Definition		Dimensions		Cross Sections								
Signs/Signals		Yield Stresses (Steel only)		Definition of Sections		VAMS								
Bracing		Yield Stresses (Steel only)		Definition of Sections		VAMS								
DATA TYPE: 07012														
VAM ID	No.	Top VAM Coords			Length feet (m)	Supporting Members *			Attached Sign Units			Walkway Units		
		X feet (m)	Y feet (m)	Z feet (m)		No.	No.	No.	No.	No.	No.	No.	No.	
1	6	25.7	20.	0.25	4	17			1					
2	6	34.28	18.667	0.25	1.333	18			2					
3	6	42.85	20.	0.25	4.	20			3					
4	6	50.35	20.	0.25	4.	22			4					
5	6	57.85	20.	0.25	4	23			5					
6	6	64.28	19.25	0.25	2.5	24			6					
7	6	69.64	20.	0.25	4.	25			7					
8	6	73.92	19.25	0.25	2.5	26			8					
9	6	-25.7	20.	0.25	4	33			9					
10	6	-34.28	18.667	0.25	1.333	34			10					
11	6	-42.85	20.	0.25	4.	36			11					
12	6	-50.35	20.	0.25	4.	38			12					
13	6	-57.85	20.	0.25	4	39			13					
14	6	-64.28	19.25	0.25	2.5	40			14					
15	6	-69.64	20.	0.25	4.	41			15					
16	6	-73.92	19.25	0.25	2.5	42			16					

Negative values for x coordinate of the support member on left arm

* Supporting Members are generated by Mesh.

10) Sign/Signals (Data Type: 09012)

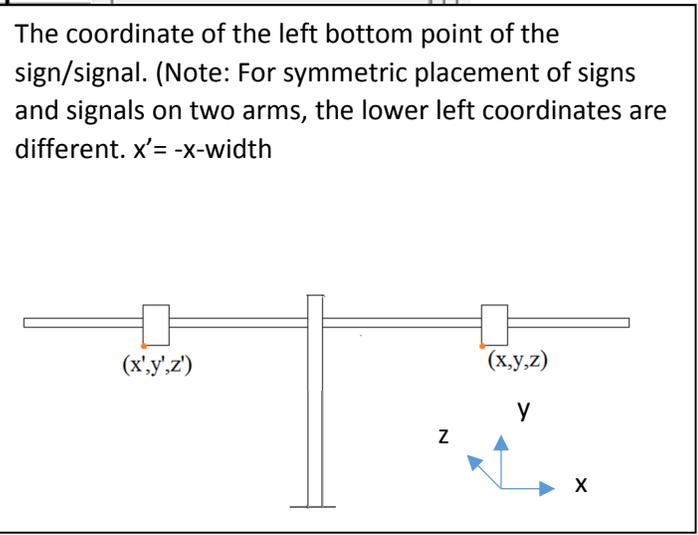
The program will treat signs and signals as class

Check the model after mesh

Click "Mesh" after this step

Configuration		Element Definition		Dimensions		Cross Sections			
Signs/Signals		Yield Stresses (Steel only)		Definition of Sections		VAMS			
Bracing		Yield Stresses (Steel only)		Definition of Sections		VAMS			
DATA TYPE: 09012									
Sign No.	Dimensions			Slope in/ft (mm/m)	Density k/cf (kg/m ³)	Lower Left Coord			Drag
	Width feet (m)	Height feet (m)	Thick. inch (mm)			X feet (m)	Y feet (m)	Z feet (m)	
1	2.005	4.23	4.09	0	0.019	24.64	15.885	0.6	
2	8.	1.333	0.1	0	0.168	30.	17.333	0.6	
3	2.005	4.23	4.09	0	0.019	41.78	15.885	0.6	
4	2.005	4.23	4.09	0	0.019	49.28	15.885	0.6	
5	2.005	4.23	4.09	0	0.019	56.78	15.885	0.6	
6	3.	2.5	0.1	0	0.168	62.67	16.75	0.6	
7	2.005	4.23	4.09	0	0.019	68.57	15.885	0.6	
8	3.	2.5	0.1	0	0.168	72.32	16.75	0.6	
9	2.005	4.23	4.09	0	0.019	-26.64	15.885	0.6	
10	8.	1.333	0.1	0	0.168	-38.	17.333	0.6	
11	2.005	4.23	4.09	0	0.019	-43.78	15.885	0.6	
12	2.005	4.23	4.09	0	0.019	-51.28	15.885	0.6	
13	2.005	4.23	4.09	0	0.019	-58.78	15.885	0.6	
14	3.	2.5	0.1	0	0.168	-65.67	16.75	0.6	
15	2.005	4.23	4.09	0	0.019	-70.57	15.885	0.6	
16	3.	2.5	0.1	0	0.168	-75.32	16.75	0.6	

The value is the equivalent density for each signal: Equivalent density = Mass / (Width * Height * Thickness)



11) Definition of Joints (Data Type: 03012)

The table of joints will be automatically generated after mesh.

12) Definition of Members (Data Type: 05012)

This table will be automatically generated after mesh.

13) Wind parameters (Data Type: 01042)

Please input factors based on the code.

14) Additional joint load (Data Type: 01042) and walkway (Data type 08012)

Input other specific load here if needed.

15) Connections (Data Type: 01052), height coefficient (Data Type: 09112) and Hinges(Data Type: 40000)

Leave default value here.

3. Twin arms spaced at 90°

For twin arms spaced at 90°, manually input is required. Two ways are offered here.

Method A. Based on the single arm model.

1) Finish all the steps of the single arm firstly according to the dimension of the major arm.

Note: For data type 31000, 33000, 34000, please fill out all the value, or leave all value blank after mesh. Incomplete input will cause error during analysis.

2) Definition of section (Data Type: 04012)

Manually input the section size of the minor arm.

Sec No	Standard Section			Tubular Shapes			General Sections							
	ID	DTH inch (mm)	WT/FT (Lb./ft)	ID	OUT D inch (mm)	Tw inch (mm)	Kt	ID	WT/FT Kip/ft (KN/m)	S1 inch (mm)	S2 inch (mm)	S3 inch (mm)	S4 inch (mm)	S5 inch (mm)
1				2	18.5	0.313	1.0							
2				2	14.72	0.313	1.0							
3				2	16.	0.313	1.0							
4				999	0	0	1.0							
5				2	11.10	0.313	1.0							
6	W	4	3					9	0.003	4.060	4.160	0.345		0.280
7				2	11.48	0.188	1.0							
8				2	7.76	0.188	1.0							
9				2	8.14	0.188	1.0							
10				2	5.83	0.188	1.0							
11														
12														
13														
14														
15														
16														
17														
18														
19														
20														

Click on SECTION LOOKUP to select a shape file first. Then use the scroll bar to view the selected file. Click on the desired data to import the section data.

Don't use auto mesh any more after step 1.

3) VAMS (Data Type: 07012)

c:\users\gengwen\desktop\sabre\sabre check 11-13\75ft_twin-2@90degree.dat - [Structure Generation]

File Edit Input Screen Go To Input Graphic Help

Mesh

Configuration Element Definition Dimensions Cross Sections

Signs/Signals

Bracing Yield Stresses (Steel only) Definition of Sections VAMS

DATA TYPE: 07072

VAM ID		Top VAM Coords			Length feet (m)	Supporting Members			Attached Sign Units			Walkway Units		
No	Sect.	X feet (m)	Y feet (m)	Z feet (m)		No.	No.	No.	No.	No.	No.	No.	No.	No.
1	6	25.7	20.	0.25	4	17			1					
2	6	34.28	18.667	0.26	1.333	18			2					
3	6	42.85	20.	0.25	4.	20			3					
4	6	50.35	20.	0.25	4.	22			4					
5	6	57.85	20.	0.25	4.	23			5					
6	6	64.28	19.25	0.25	2.5	24			6					
7	6	69.64	20.	0.25	4.	25			7					
8	6	73.92	19.25	0.26	2.6	26			8					
9	6	0.25	20.	25.7	4	33			9					
10	6	0.25	18.667	34.28	1.333	34			10					
11	6	0.25	20.	42.85	4.	36			11					
12	6	0.25	20.	50.35	4.	38			12					
13	6	0.25	20.	57.85	4.	39			13					
14	6	0.25	19.25	64.28	2.5	40			14					
15	6	0.25	20.	69.64	4.	41			15					
16	6	0.25	19.25	73.92	2.5	42			16					
17														
18														
19														
20														
21														
22														
23														
24														
25														
26														

* Supporting Members

Manually input the value of the vertical support member on the perpendicular arm.

4) Sign/Signals (Data Type: 09012)

The program will treat signs and signals as cube.

Manually input sizes of signs and signals on the perpendicular arm.
Lower left coordinates

Sign No	Dimensions			Slope in/ft (mm/m)	Density k/cf (Kg/m ³)	Lower Left Coord			Optic Co
	Width feet (m)	Height feet (m)	Thick inch (mm)			X feet (m)	Y feet (m)	Z feet (m)	
1	2.005	4.23	4.09	0	0.019	24.64	15.885	0.6	
2	8.	1.333	0.1	0	0.168	30.	17.333	0.6	
3	2.005	4.23	4.09	0	0.019	41.78	15.885	0.6	
4	2.005	4.23	4.09	0	0.019	49.28	15.885	0.6	
5	2.005	4.23	4.09	0	0.019	56.78	15.885	0.6	
6	3.	2.5	0.1	0	0.168	62.67	16.75	0.6	
7	2.005	4.23	4.09	0	0.019	68.57	15.885	0.6	
8	3.	2.5	0.1	0	0.168	72.32	16.75	0.6	
9	2.005	4.23	4.09	0	0.019	0.6	15.885	24.64	
10	8.	1.333	0.1	0	0.168	0.6	17.333	30.	
11	2.005	4.23	4.09	0	0.019	0.6	15.885	41.78	
12	2.005	4.23	4.09	0	0.019	0.6	15.885	49.28	
13	2.005	4.23	4.09	0	0.019	0.6	15.885	56.78	
14	3.	2.5	0.1	0	0.168	0.6	16.75	62.67	
15	2.005	4.23	4.09	0	0.019	0.6	15.885	68.57	
16	3.	2.5	0.1	0	0.168	0.6	16.75	72.32	

5) Definition of Joints (Data Type: 03012)

Manually input joints of the perpendicular arm. The number of joints depend on how many segments the arm is to be divided into.

JNT No	Coordinates			Supp. Translation			Supp. Rotation		
	X ft(m)	Y ft(m)	Z ft(m)	X	Y	Z	XX	YY	ZZ
26	70.07	18.	0.00						
27	75.	18.	0.00						
28	0	18.	1.						
29	0	18.	5.93						
30	0	18.	10.87						
31	0	18.	15.8						
32	0	18.	20.73						
33	0	18.	25.67						
34	0	18.	30.6						
35	0	18.	35.53						
36	0	18.	40.47						
37	0	18.	45.4						
38	0	18.	50.33						
39	0	18.	55.27						
40	0	18.	60.2						
41	0	18.	65.13						
42	0	18.	70.07						
43	0	18.	75.						

6) Definition of members (Data Type: 05012)

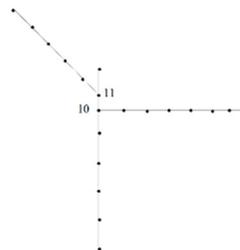
Manually input members of the perpendicular arm.



7) Connections (Data Type: 01052)

If the connection joint of the perpendicular arm is different. Input that joints here.

For example: If the major is connected to joint 10, and minor arm is connected to joint 11. 11 should be manually input into the second blank.



8) Check the model by graph.

Method B. Based on the twin arms spaced at 180°

For twin arms spaced at 90°, manually input is required. Two ways are offered here.

- 1) Finish all the steps of the twin arms spaced at 180° firstly. Right arm has same dimensions as the major arm. Left arm has same dimensions as the perpendicular arm

Don't use auto mesh any more after step 1.

Note: For data type 31000, 33000, 34000, please fill out all the value, or Incomplete input will cause error during analysis.

- 2) VAMS (Data Type: 07012)

The screenshot shows the 'VAMS' data entry screen. It features two tables: 'Top VAM Coords' and 'Supporting Members *'. A callout box with a red arrow points to the 'X' and 'Z' columns in the 'Top VAM Coords' table, containing the text: "Swap |x| and z coordinates of the minor arms".

VAM ID		Top VAM Coords			Length feet (m)	Supporting Members *			Attached Sign Units		
No.	Sect.	X feet (m)	Y feet (m)	Z feet (m)		No.	No.	No.	No.	No.	No.
1	6	25.7	20.	0.25	4	17			1		
2	6	34.28	18.667	0.25	1.333	18			2		
3	6	42.85	20.	0.25	4.	20			3		
4	6	50.35	20.	0.25	4.	22			4		
5	6	57.85	20.	0.25	4.	23			5		
6	6	64.28	19.25	0.25	2.5	24			6		
7	6	69.64	20.	0.25	4.	25			7		
8	6	73.92	19.25	0.25	2.5	26			8		
9	6	-25.7	20.	0.25	4.	33			9		
10	6	-34.28	18.667	0.25	1.333	34			10		
11	6	-42.85	20.	0.25	4.	36			11		
12	6	-50.35	20.	0.25	4.	38			12		
13	6	-57.85	20.	0.25	4.	39			13		
14	6	-64.28	19.25	0.25	2.5	40			14		
15	6	-69.64	20.	0.25	4.	41			15		
16	6	-73.92	19.25	0.25	2.5	42			16		

- 3) Sign/Signals (Data Type: 09012)

The screenshot shows the 'Signs/Signals' data entry screen. It features a 'Dimensions' table and a 'Lower Left Coord' table. A callout box with a red arrow points to the 'X' and 'Z' columns in the 'Lower Left Coord' table, containing the text: "Swap the x and z coordinates. z = |x| - width". To the right, a diagram shows a 3D coordinate system with x, y, and z axes, and a sign structure with points labeled (x',y',z) and (x,y,z).

Sign No.	Dimensions			Slope in/ft (mm/m)	Density k/cf (Kg/m ³)	Lower Left Coord		
	Width feet (m)	Height feet (m)	Thick. inch (mm)			X feet (m)	Y feet (m)	Z feet (m)
1	2.005	4.23	4.09	0	0.019	24.64	15.885	0.6
2	8.	1.333	0.1	0	0.168	30.	17.333	0.6
3	2.005	4.23	4.09	0	0.019	41.78	15.885	0.6
4	2.005	4.23	4.09	0	0.019	49.28	15.885	0.6
5	2.005	4.23	4.09	0	0.019	56.78	15.885	0.6
6	3.	2.5	0.1	0	0.168	62.67	16.75	0.6
7	2.005	4.23	4.09	0	0.019	68.57	15.885	0.6
8	3.	2.5	0.1	0	0.168	72.32	16.75	0.6
9	2.005	4.23	4.09	0	0.019	0.6	15.885	24.64
10	8.	1.333	0.1	0	0.168	0.6	17.333	30.
11	2.005	4.23	4.09	0	0.019	0.6	15.885	41.78
12	2.005	4.23	4.09	0	0.019	0.6	15.885	49.28
13	2.005	4.23	4.09	0	0.019	0.6	15.885	56.78
14	3.	2.5	0.1	0	0.168	0.6	16.75	62.67
15	2.005	4.23	4.09	0	0.019	0.6	15.885	68.57
16	3.	2.5	0.1	0	0.168	0.6	16.75	72.32
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								

4) Definition of Joints (Data Type: 03012)

Manually input joints of the perpendicular arm. The number of joints depend on how many segments the arm is to be divided into.

The screenshot displays two overlapping windows titled "Definition of Joints". Both windows show a table for "DATA TYPE -03012".

Left Window Table:

JNT No	X ft(m)	Y ft(m)	Z ft(m)
26	70.07	18.	0.00
27	75.	18.	0.00
28	-1.	18.	0.00
29	-5.93	18.	0.00
30	-10.87	18.	0.00
31	-15.8	18.	0.00
32	-20.73	18.	0.00
33	-25.67	18.	0.00
34	-30.6	18.	0.00
35	-35.53	18.	0.00
36	-40.47	18.	0.00
37	-45.4	18.	0.00
38	-50.33	18.	0.00
39	-55.27	18.	0.00
40	-60.2	18.	0.00
41	-65.13	18.	0.00
42	-70.07	18.	0.00
43	-75	18.	0.00
44			
45			

Right Window Table:

JNT No	X ft(m)	Y ft(m)	Z ft(m)	Supp. Translation			Supp. Rotation		
				X	Y	Z	XX	YY	ZZ
26	70.07	18.	0.00						
27	75.	18.	0.00						
28	0	18.	1.						
29	0	18.	5.93						
30	0	18.	10.87						
31	0	18.	15.8						
32	0	18.	20.73						
33	0	18.	25.67						
34	0	18.	30.6						
35	0	18.	35.53						
36	0	18.	40.47						
37	0	18.	45.4						
38	0	18.	50.33						
39	0	18.	55.27						
40	0	18.	60.2						
41	0	18.	65.13						
42	0	18.	70.07						
43	0	18.	75.						
44									
45									

A red circle highlights the X and Z columns in both tables. A callout box with an arrow pointing to the X and Z columns in the right window contains the text: "Swap |x| and z coordinates of the minor arms".

5) Check the model by graph.

4. Triple arms

For triple arms spaced at 90°, manually input is required.

1) Finish all the steps of the twin arms spaced at 180°

Note: For data type 31000, 33000, 34000, please fill out all the value, or leave all value blank after mesh. Incomplete input will cause error during analysis.

2) Definition of section (Data Type: 04012)

Manually input the section size of the perpendicular arm.

Sec No	Standard Section			Tubular Shapes			General Sections							
	ID	DTH (inch)	WT/FT (Lb./ft)	ID	OUT D (inch)	Tw (inch)	Kt	ID	WT/FT (Kip/ft)	S1 (inch)	S2 (inch)	S3 (inch)	S4 (inch)	S5 (inch)
1				2	18.5	0.313	1.0							
2				2	14.72	0.313	1.0							
3				2	16.	0.313	1.0							
4				999	0	0	1.0							
5				2	11.10	0.313	1.0							
6	W	4	3					9	0.003	4.060	4.160	0.345		0.280
7				2	11.48	0.188	1.0							
8				2	7.76	0.188	1.0							
9				2	8.14	0.188	1.0							
10				2	5.83	0.188	1.0							
11														
12														
13														
14														
15														
16														
17														
18														
19														
20														

Don't use auto mesh any more after step 1.

3) VAMS (Data Type: 07012)

VAM ID	No	Sect.	Top VAM Coords			Length (feet)	Supporting Members *			Attached Sign Units			Walkway Units		
			X (feet)	Y (feet)	Z (feet)		No.	No.	No.	No.	No.	No.	No.	No.	No.
1	6		25.7	20.	0.25	4				1					
2	6		34.28	18.667	0.25	1.333				2					
3	6		42.85	20.	0.25	4.				3					
4	6		50.35	20.	0.25	4.				4					
5	6		57.85	20.	0.25	4.				5					
6	6		64.28	19.25	0.25	2.5				6					
7	6		69.64	20.	0.25	4.				7					
8	6		73.92	19.25	0.25	2.5				8					
9	6		-25.7	20.	0.25	4				9					
10	6		-34.28	18.667	0.25	1.333				10					
11	6		-42.85	20.	0.25	4.				11					
12	6		-50.35	20.	0.25	4.				12					
13	6		-57.85	20.	0.25	4.				13					
14	6		-64.28	19.25	0.25	2.5				14					
15	6		-69.64	20.	0.25	4.				15					
16	6		-73.92	19.25	0.25	2.5				16					
17	6		0.25	20.	25.7	4.				17					
18	6		0.25	18.667	34.28	1.333				18					
19	6		0.25	20.	42.85	4.				19					
20	6		0.25	20.	50.35	4.				20					
21	6		0.25	20.	57.85	4.				21					
22	6		0.25	19.25	64.28	2.5				22					
23	6		0.25	20.	69.64	4.				23					
24	6		0.25	19.25	73.92	2.5				24					
25															
26															

Manually input the value of the vertical support member on the perpendicular arm.

4) Sign/Signals (Data Type: 09012)

The program will treat signs and signals as cube.

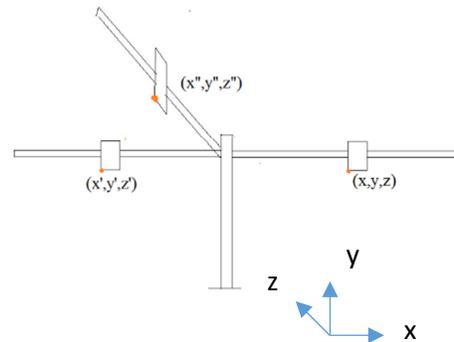
DATA TYPE: 07012

VAM ID		Top VAM Coords			Length feet (m)	Supporting Members *			Attached Sign Units			Walkway Units		
No	Sect.	X feet (m)	Y feet (m)	Z feet (m)		No.	No.	No.	No.	No.	No.	No.	No.	No.
1	6	25.7	20.	0.25	4	17			1					
2	6	34.28	18.667	0.25	1.333	18								
3	6	42.85	20.	0.25	4.	20			3					
4	6	50.35	20.	0.25	4.	22			4					
5	6	57.85	20.	0.25	4.	23			5					
6	6	64.28	19.25	0.25	2.5	24			6					
7	6	69.64	20.	0.25	4.	25			7					
8	6	73.92	19.25	0.25	2.5	26			8					
9	6	-25.7	20.	0.25	4	33			9					
10	6	-34.28	18.667	0.25	1.333	34			10					
11	6	-42.85	20.	0.25	4.	36			11					
12	6	-50.35	20.	0.25	4.	38			12					
13	6	-57.85	20.	0.25	4.	39			13					
14	6	-64.28	19.25	0.25	2.5	40			14					
15	6	-69.64	20.	0.25	4.	41			15					
16	6	-73.92	19.25	0.25	2.5	42			16					
17	6	0.25	20.	25.7	4.	49			17					
18	6	0.25	18.667	34.28	1.333	50			18					
19	6	0.25	20.	42.85	4.	52			19					
20	6	0.25	20.	50.35	4.	54			20					
21	6	0.25	20.	57.85	4.	55			21					
22	6	0.25	19.25	64.28	2.5	56			22					
23	6	0.25	20.	69.64	4.	57			23					
24	6	0.25	19.25	73.92	2.5	58			24					
25														
26														

* Supporting Members are generated by Mes

Manually input sizes of signs and signals on the perpendicular arm.

Lower left coordinates:



5) Definition of Joints (Data Type: 03012)

Manually input joints of the perpendicular arm. The number of joints depend on how many segments the arm is to be divided into.

c:\users\gengwen\desktop\sabre\sabre check 11-13\75ft_triple-3@90degree.dat - [Structure Lookup]

File Edit Input Screen Go To Input Graphic Help

Mesh

Definition of Joints

DATA TYPE: 03012

JNT No	Coordinates			Supp. Translation			Supp. Rotation		
	X ft(m)	Y ft(m)	Z ft(m)	X	Y	Z	XX	YY	ZZ
43	-75	18	0.0						
44	0.00	18.	1.						
45	0.00	18.	5.93						
46	0.00	18.	10.87						
47	0.00	18.	15.8						
48	0.00	18.	20.73						
49	0.00	18.	25.67						
50	0.00	18.	30.6						
51	0.00	18.	35.53						
52	0.00	18.	40.47						
53	0.00	18.	45.4						
54	0.00	18.	50.33						
55	0.00	18.	55.27						
56	0.00	18.	60.2						
57	0.00	18.	65.13						
58	0.00	18.	70.07						
59	0.00	18.	75.						
60									
61									

6) Definition of members (Data Type: 05012)

Manually input members of the perpendicular arm.

c:\users\gengwen\desktop\sabre\sabre check 11-13\75ft_triple-3@90degree.dat - [Structure Lookup]

File Edit Input Screen Go To Input Graphic Help

Mesh

Definition of Joints Definition of Members

DATA TYPE : 05012

Mem. No.	Sect. From	Sect. To	Joints From	Joints To	Angle Degree	Unit No.	Unit Type	Mat'l Yield ksi(MPa)	Mem. Type	Stress Cat
40	9		40	41		7	2	55.		
41			41	42		7	2	55.		
42		10	42	43		7	2	55.		
43	4	4	10	44				55.		
44	3		44	45		8	2	55.		
45			45	46		8	2	55.		
46			46	47		8	2	55.		
47			47	48		8	2	55.		
48			48	49		8	2	55.		
49			49	50		8	2	55.		
50		5	50	51		8	2	55.		
51	7		51	52		9	2	55.		
52			52	53		9	2	55.		
53			53	54		9	2	55.		
54			54	55		9	2	55.		
55		8	55	56		9	2	55.		
56	9		56	57		10	2	55.		
57			57	58		10	2	55.		
58		10	58	59		10	2	55.		
59										
60										

Excel Work Sheet

Note: If user specifies his own members please

- 1) Use one "prismatic" or "tapered" section within one unit.
- 2) Maximum unit number is 40. User may define multiple units within one unit type.
- 3) Only 4 unit types are allowed: (1) chord interior truss, (2) exterior truss - main chord members, (3) tower - main vertical members, (4) tower truss
- 4) If member types are blank, fixed-end members are assumed.

If the connection joint of the perpendicular arm is different. Input that joints here.

7) Connections (Data Type: 01052)

c:\users\gengwen\desktop\sabre\sabre check 11-13\75ft_twin-2@90degree.dat - [Options]

File Edit Input Screen Go To Input Graphic Help

Mesh

Parameters Additional Joint Loads Walkways

Member Option Connections Height Coeff Hinges

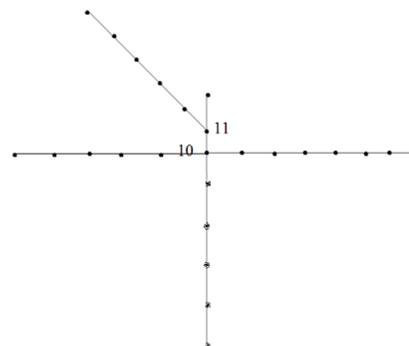
DATA TYPE : 01052

CONNECTION JOINTS

10

* data is generated by Mesh

For example: If the major is connected to joint 10, and minor arm is connected to joint 11. 11 should be manually input into the second blank.



8) Check the model by graph.