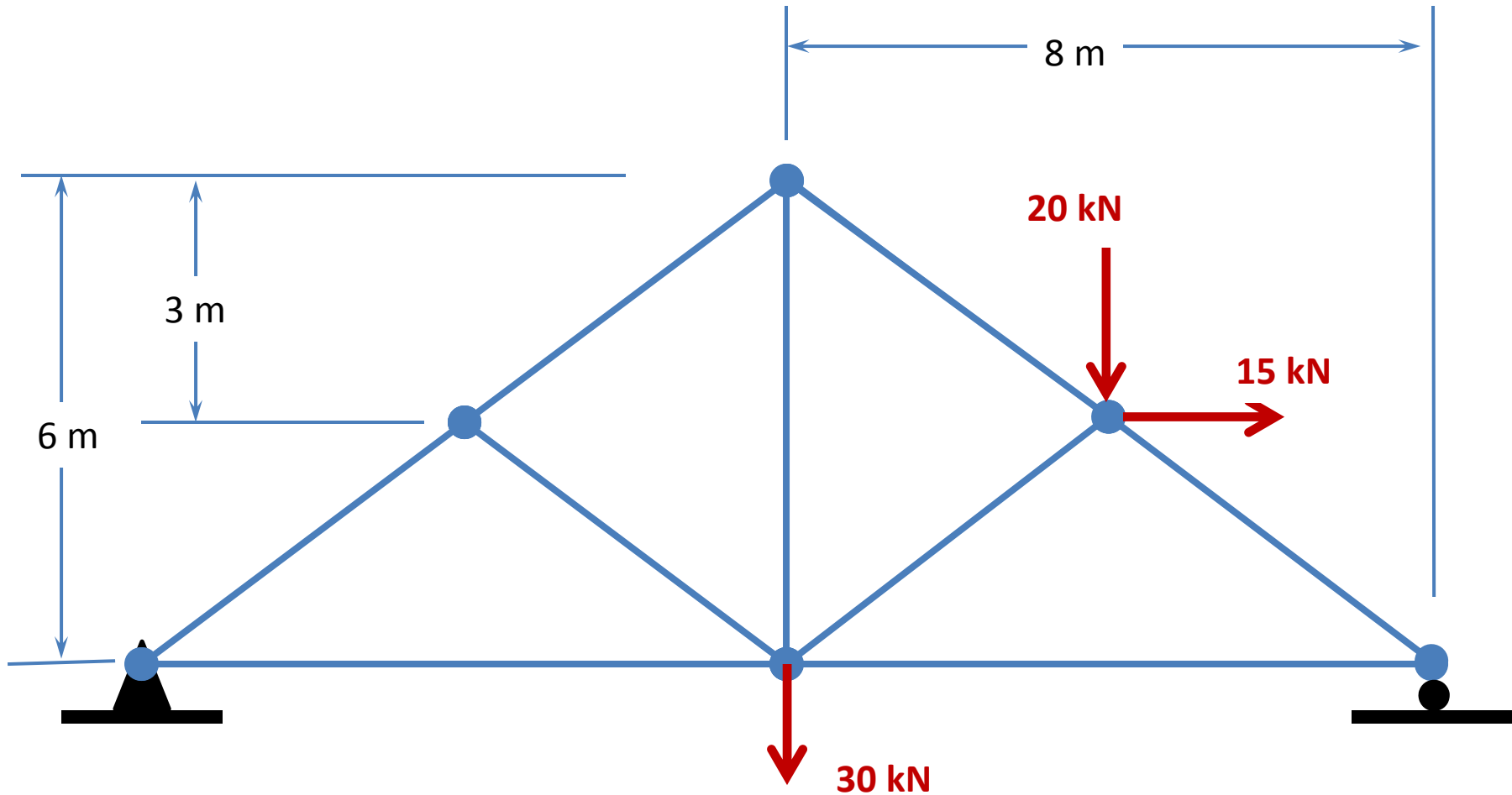Use SolidWorks Simulation to determine
1.   The force in each member of the truss.
2.   The reactions at A and B.
Use any pipe Structural Member, Alloy Steel as the material, and answer the question: Does the cross-section change the force in the members?

8 m

20 kN

3 m

15 kN

6 m

30 kN

SOLUTION: Setting up the problem in SolidWorks Simulation and running the FEA Solver generates the following result.
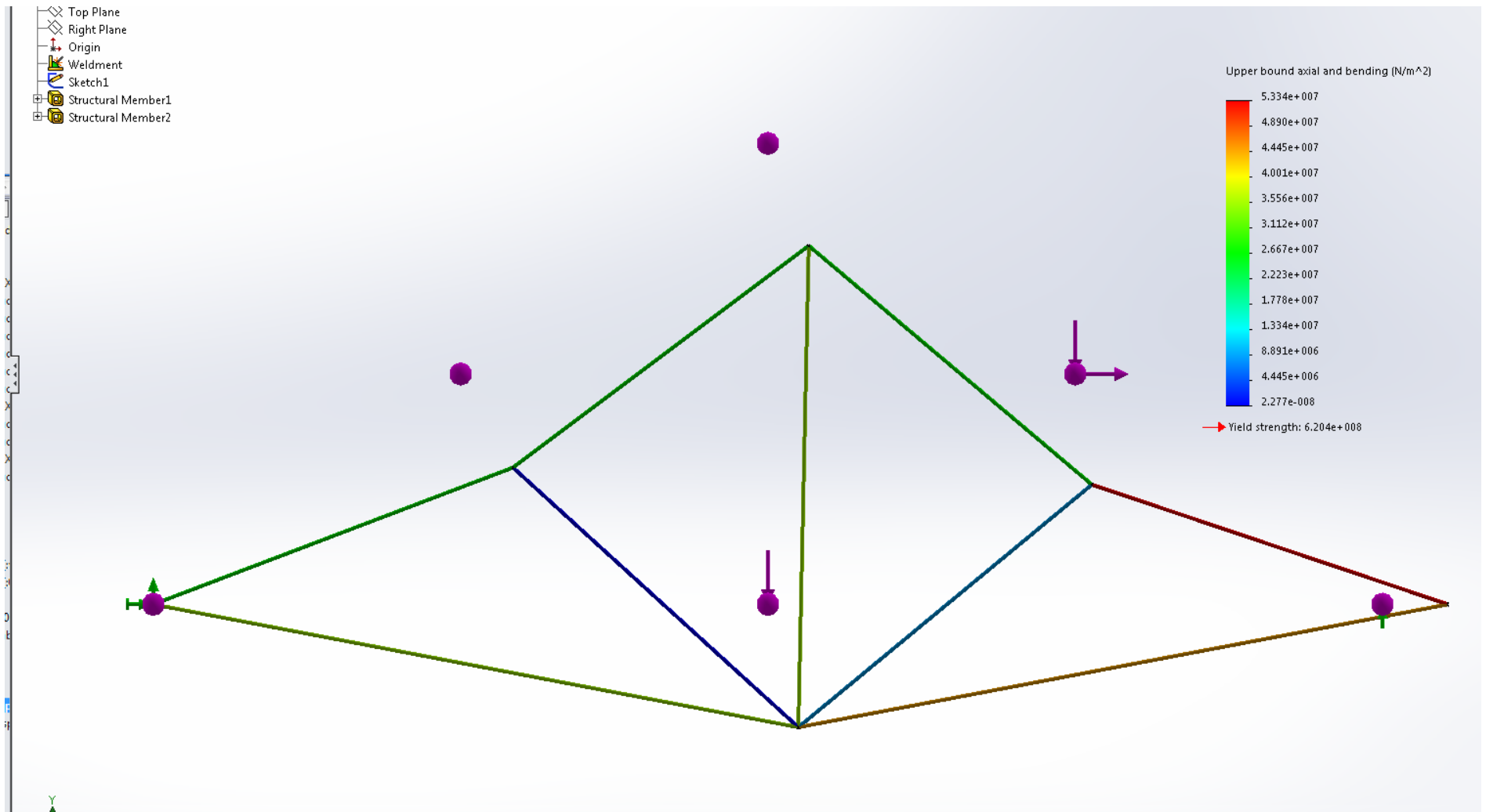
Under the Simulation Feature Manager, with the Right-Mouse-Button select "Results" and then select "List Beam Forces" to generate a table of loads on each element of the truss.
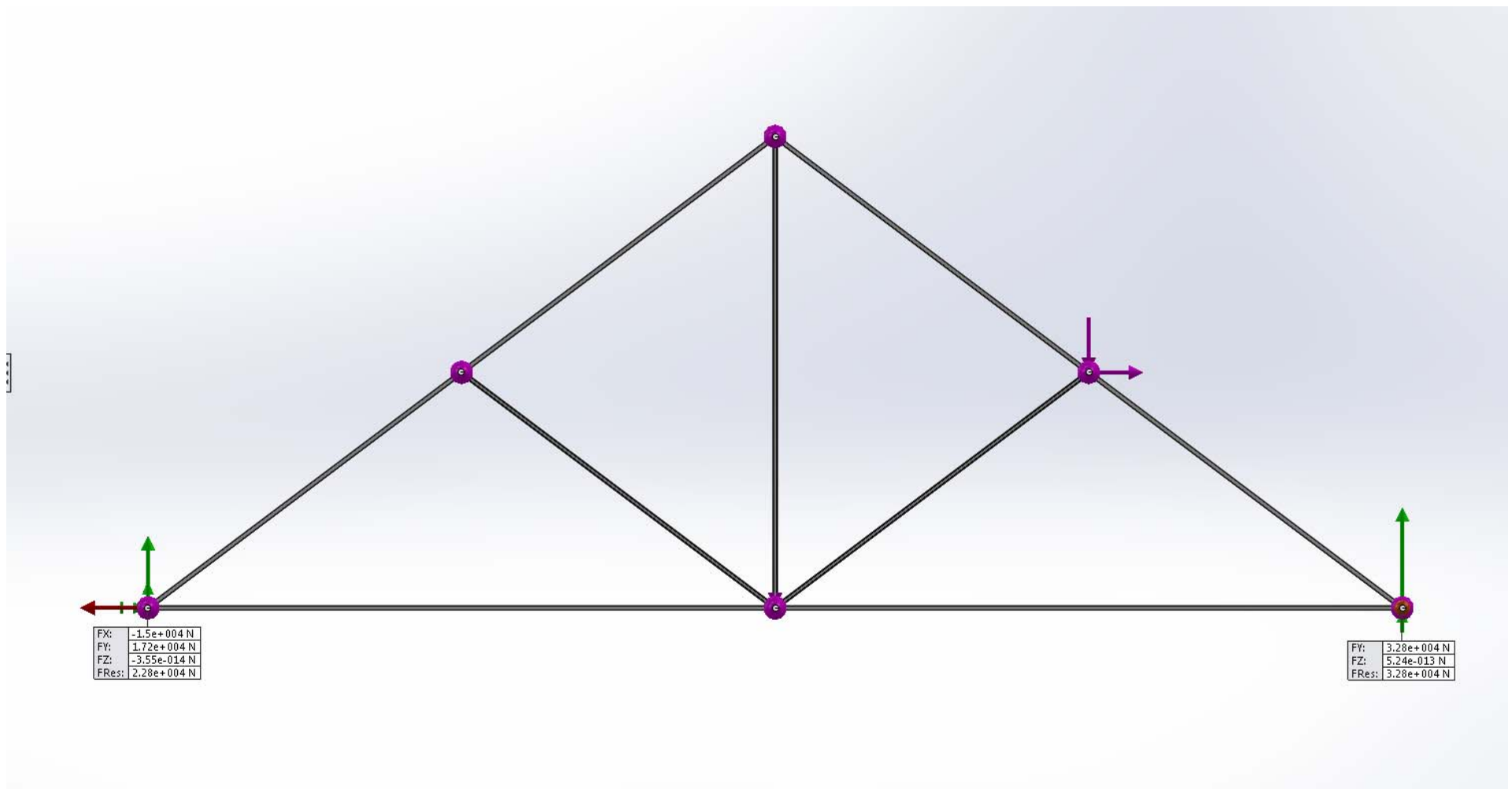
List Forces

Study name:3DTruss   ☐ Show extreme values only

Units: SI ▼

[<-] [->]   ☐ Show only beam end points

Beam Name	Element	End	Axial (N)	Shear1 (N)	Shear2 (N)	Moment 1 (N.m)	Moment 2 (N.m)	Torque (N.m)
Beam-1(Structural Member1[4])								
	1	1	54688	0	0	0	0	0
		2	-54688	0	0	0	0	0
Beam-2(Structural Member2[1])								
	2	1	2.3342e-011	0	0	0	0	0
		2	-2.3342e-011	0	0	0	0	0
Beam-3(Structural Member1[6])								
	3	1	-37917	0	0	0	0	0
		2	37917	0	0	0	0	0
Beam-4(Structural Member1[1])								
	4	1	28646	0	0	0	0	0
		2	-28646	0	0	0	0	0
Beam-5(Structural Member1[3])								
	5	1	28646	0	0	0	0	0
		2	-28646	0	0	0	0	0
Beam-6(Structural Member1[5])								
	6	1	-43750	0	0	0	0	0
		2	43750	0	0	0	0	0
Beam-7(Structural Member2[2])								
	7	1	7291.7	0	0	0	0	0
		2	-7291.7	0	0	0	0	0
Beam-8(Structural Member1[2])								
	8	1	28646	0	0	0	0	0
		2	-28646	0	0	0	0	0
Beam-9(Structural Member2[3])								
	9	1	-34375	0	0	0	0	0
		2	34375	0	0	0	0	0

[Close]   [Save]   [Help]

Under the Simulation Feature Manager, with the Right-Mouse-Button select "Results" and then select "List Resultant Forces" to show the reactions where the constraints are applied.

FX:	-1.5e+004 N
FY:	1.72e+004 N
FZ:	-3.55e-014 N
FRes:	2.28e+004 N

FY:	3.28e+004 N
FZ:	5.24e-013 N
FRes:	3.28e+004 N

Under the Simulation Feature Manager "Results" tree, with the Right-Mouse-Button select "Probe" and then select members on the truss to show the stress in the member.

The stress in a member is a function of the cross-section; however, **the force in each member is independent of cross-section.**