**PA2 – Report**

**Analysis of Space Truss:**

This given Space Frame Structure has 25 elements.

**GIVEN:**

Circular Cross-sections with Diameter 2 inches

At Nodes 1 and 2 a constant force 60000 pounds is applied in y-direction.

4 Nodes are fixed on the ground.

Youngs Modulus E = 3E7 psi, Poisson’s ratio = 0.3

Yield Stress = 37000 psi, and mass density = 7.3E-4

**Displacement At Nodes**

|  |  |  |  |
| --- | --- | --- | --- |
| Node | U | **V** | **W** |
| 1 | 0 | 0.2376 | 0 |
| 2 | 0 | 0.2376 | 0 |
| 3 | -0.0017 | 0.0156 | -0.0507 |
| 4 | 0.0017 | 0.0156 | -0.0507 |
| 5 | -0.0017 | 0.0156 | 0.0507 |
| 6 | 0.0017 | 0.0156 | 0.0507 |
| 7 | 0 | 0 | 0 |
| 8 | 0 | 0 | 0 |
| 9 | 0 | 0 | 0 |
| 10 | 0 | 0 | 0 |

The Stresses in the elements are computed and Tabulated in the below Table.

|  |  |
| --- | --- |
| Element No. | Stress Induced |
| 1 | 0 |
| 2 | -1.78E4 |
| 3 | -1.145E4 |
| 4 | 1.145E4 |
| 5 | 1.782E4 |
| 6 | -1.145E4 |
| 7 | -1.782E4 |
| 8 | 1.782E4 |
| 9 | 1.145E4 |
| 10 | 2.88E3 |
| 11 | 0 |
| 12 | -2.1588E4 |
| 13 | -1.10E4 |
| 14 | -5.765E3 |
| 15 | 0 |
| 16 | -1.106E4 |
| 17 | -2.1588E4 |
| 18 | -5.765E3 |
| 19 | -2.88E3 |
| 20 | 5.765E3 |
| 21 | 2.1588E4 |
| 22 | 1.106E4 |
| 23 | 5.765E3 |
| 24 | 1.106E4 |
| 25 | -2.1588E4 |

The Deformation Plot is Shown in the Fig Below

