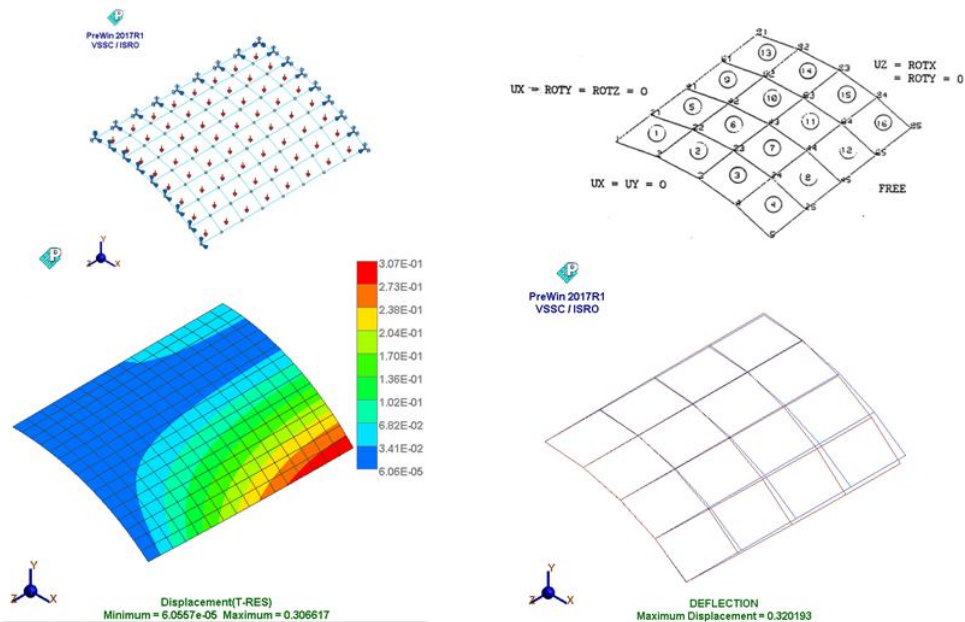


Static analysis of cylindrical shell roof under self-weight



- Material property** : $E=432.0 \times 10^6 \text{ lb/ft}^2$, $\nu = 0.0$, $\rho = 11.25 \text{ lb-sec}^2/\text{ft}^4$
- Element type** : 3-D four node thin shell element, cylindrical shell roof with a radius 25 ft, length 50 ft and thickness 0.25 ft is subjected to self weight load of 90 lb/ft. At $Z = 0.0 \text{ ft}$, $U_x = U_y = 0.0$. At $Z = 25.0 \text{ ft}$, Symmetric boundary conditions $U_z = \text{ROT}_x = \text{ROT}_y = 0.0$. At $X = 0.0 \text{ ft}$, Symmetric boundary conditions $U_x = \text{ROT}_y = \text{ROT}_z = 0.0$. Acceleration due to gravity is taken to be 32.0 ft/s^2 .
- Finite element statistics** :
- | | | |
|-----------------|--------------------|--------------------|
| Number of nodes | Number of elements | Degrees of freedom |
| 833 | 256 | 4736 |

Output parameters	Theoretical value	FEAST ^{SMT}	NISA2 [®]
Y-direction displacement (ft) 4 node			
4X4 mesh		0.3201	0.3027
8 X 8 mesh		0.3957	0.3003
16 X 16 mesh		0.3059	0.3003
Y-direction displacement (ft) 8 node			
4 X 4 mesh	0.2935	0.3173	
8 X 8 mesh	0.3019	0.3938	
16 X 16 mesh	0.3015	0.3066	