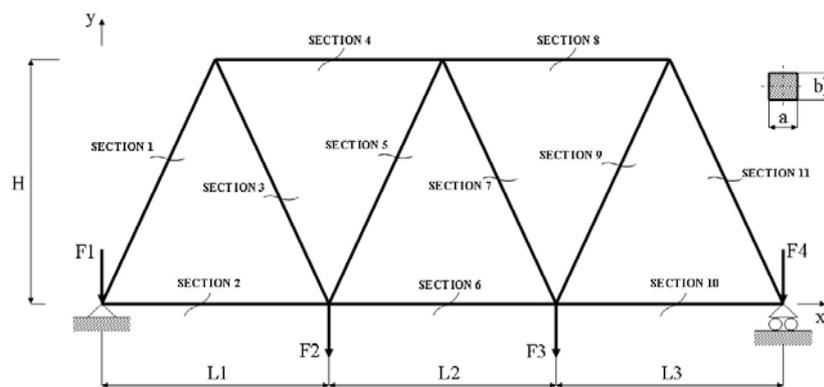


Course in ANSYS

Example0152

Example – Truss 2D



$$E = 210 \times 10^9 \text{ N/m}^2$$

$$\nu = 0.3$$

$$L1 = L2 = L3 = 3.6 \text{ m}$$

$$H = 3.118 \text{ m}$$

$$a = b = 0.050 \text{ m}$$

$$F1 = 280 \text{ N}$$

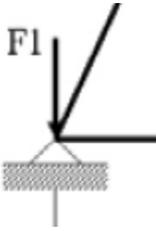
$$F2 = 210 \text{ N}$$

$$F3 = 280 \text{ N}$$

$$F4 = 360 \text{ N}$$

Example0152

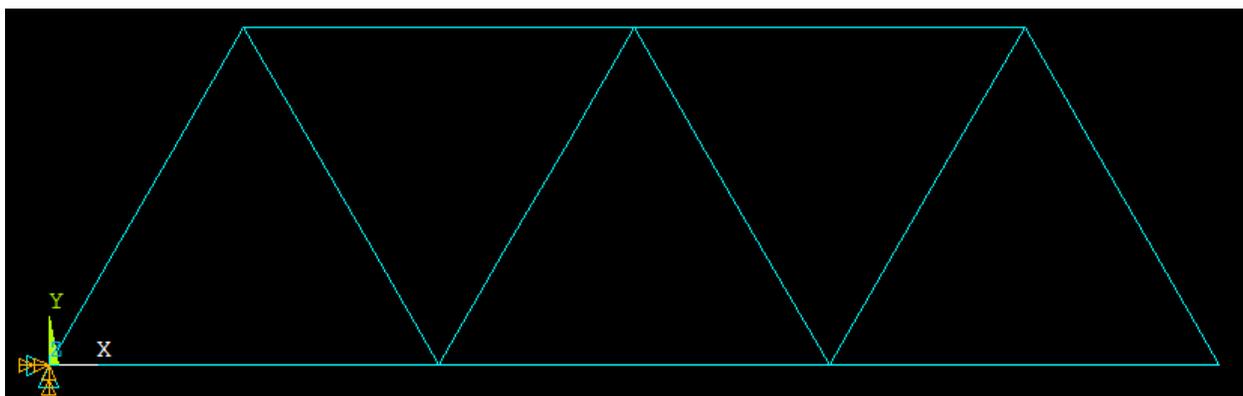
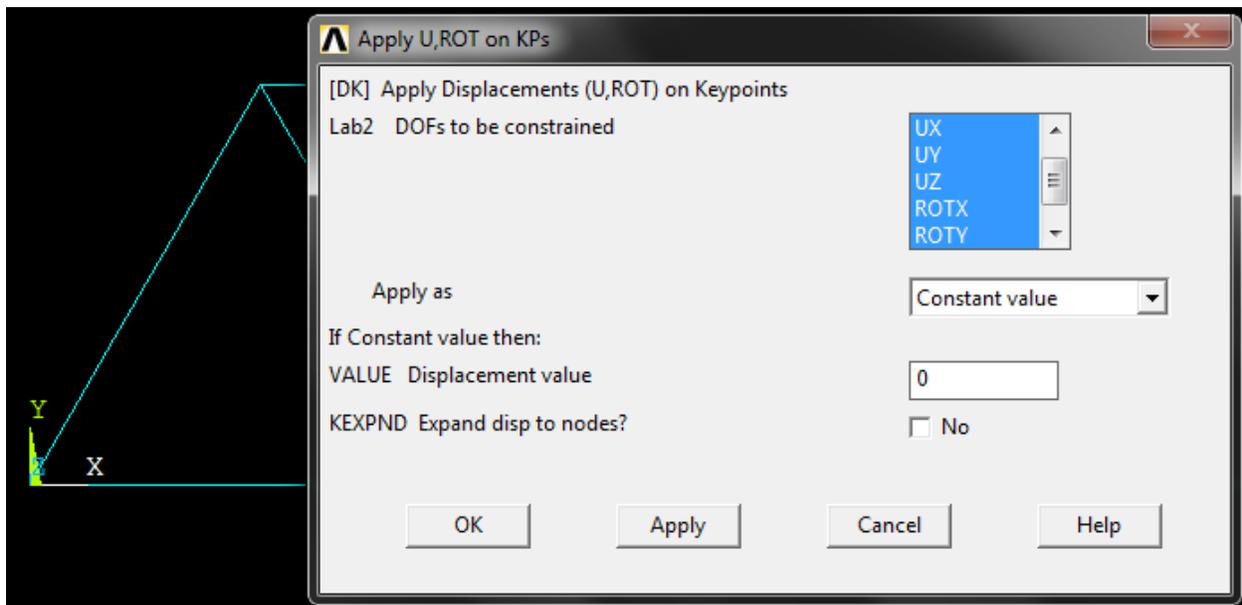
Help: Defining Hinge and Roller Constraints

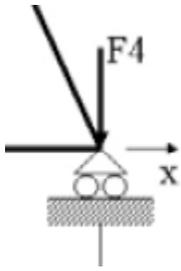


'Hinge' constraints **disallow any translation** of the node. However, the members are **free to rotate about the z-axis** (into the page) as this is a pin connection.

One must consider the following:

- The node's displacement in the x-, y-, and z-axes are constrained to 0 ($UX = UY = UZ = 0$)
- Rotation about the x- and y-axes are constrained to 0 ($ROTX = ROTY = 0$)
- The rotation about the z-axis ($ROTZ$) remains unconstrained

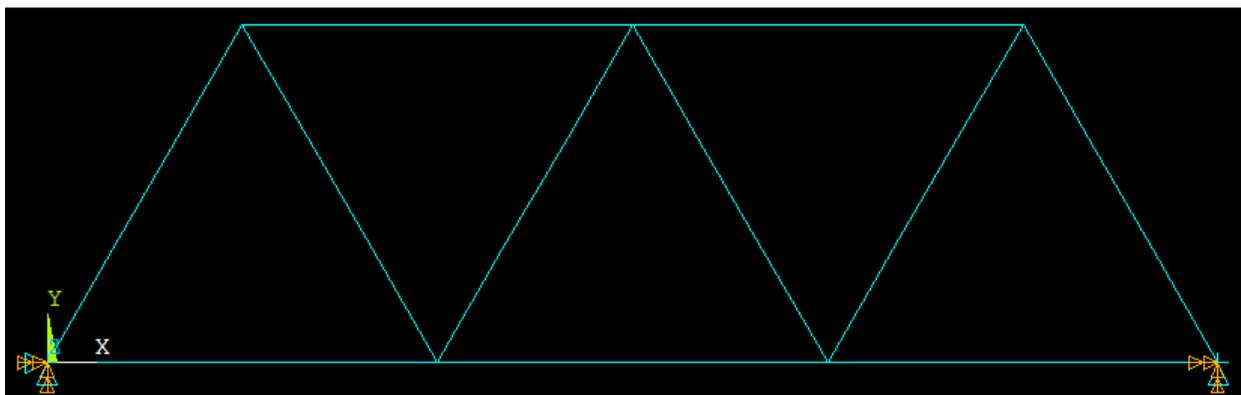
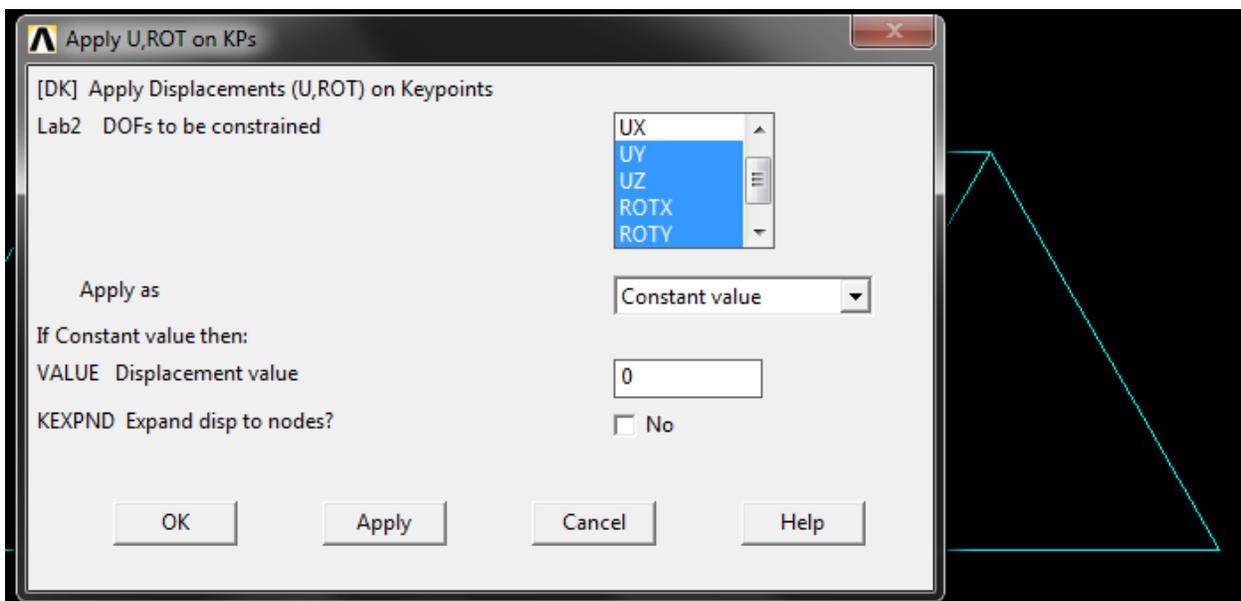




‘Roller’ constraints **disallow nodal translation along the direction normal to the roller plane**, yet **allow translation along the roller plane**. In this case, the roller plane is along the x-axis and the y-axis is normal to the roller plane.

One must consider the following:

- The node’s displacement along the direction normal to the roller plane is constrained to zero ($UY = 0$)
- The node’s displacement along the z-axis, as well as its rotation about the x- and y-axes, are constrained to 0 ($UZ = ROTX = ROTY = 0$)
- Displacement along the x-axis (UX) and rotation about the z-axis ($ROTZ$) remain unconstrained



Example – Truss 2D

Objective:

Compute the maximum deflection

Tasks:

Display the deflection figure? Display member forces?

Topics:

Topics: Start of analysis, Element type, Real constants, Material, modeling, element size for beam models, saving/restoring

Example0152

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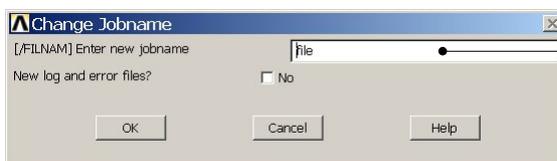
Example - title

Utility Menu > File > Change Jobname

GUI

/jobname, Example0152

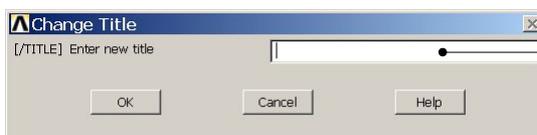
Command line entry



Enter: Example0152

Utility Menu > File > Change Title

Enter: Truss 2D



Example0152

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