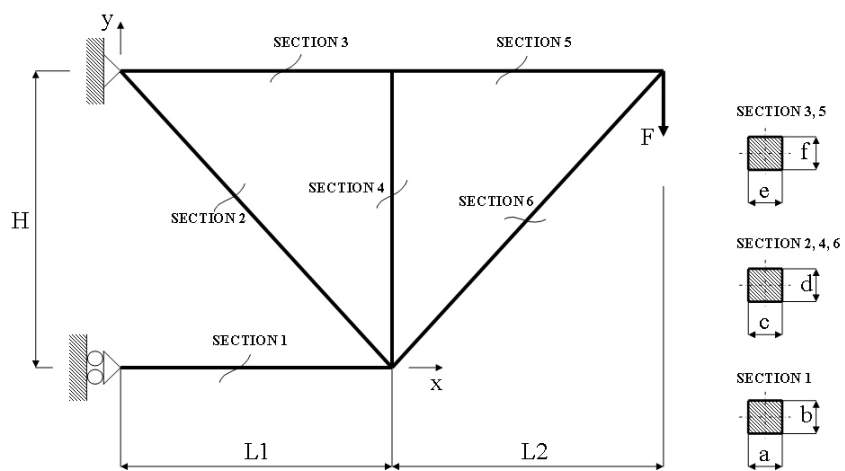


Course in ANSYS

Example0151

Example – Truss 2D



Example0151

2

Example – Truss 2D

Objective: Compute the maximum deflection
Tasks: Display the deflection figure?
Topics: Topics: Start of analysis, Element type, Real constants, Material, modeling, element size for beam models, saving/restoring

$E = 210000\text{N/mm}^2$
 $\nu = 0.3$
 $L = 100\text{mm}$
 $H = 120\text{mm}$
 $a = b = 20\text{mm}$
 $c = d = 10\text{mm}$
 $e = f = 5\text{mm}$
 $F = 1000\text{N}$

Example0151

3

Example - title

Utility Menu > File > Change Jobname • GUI
/jobname, Example0151 • Command line entry



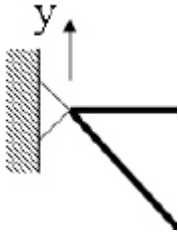
Utility Menu > File > Change Title
/title, Truss 2D



Example0151

4

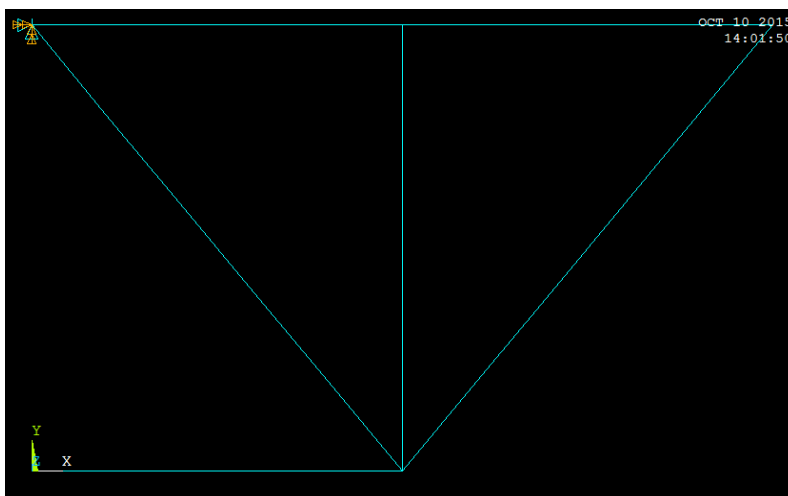
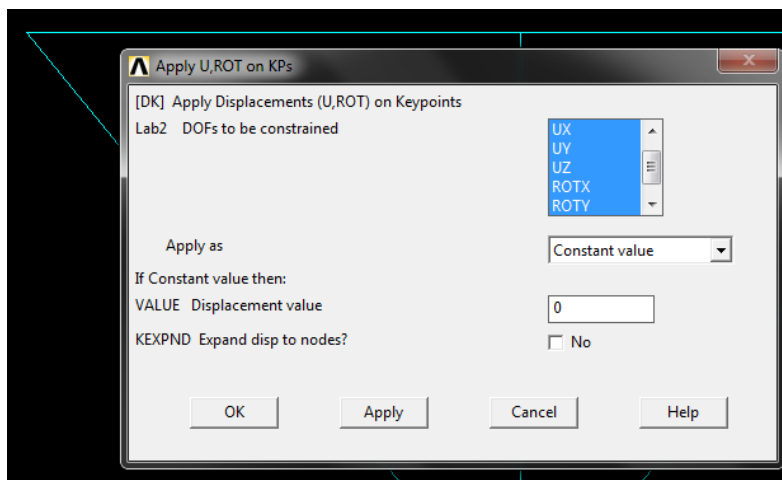
Help: Defining Hinge and Roller Constraints

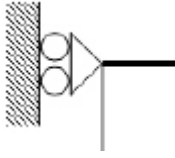


'Hinge' constraints **disallow any translation** of the node. However, the members are **free to rotate about the z-axis** (into the page) as this is a pin connection.

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 y-axis and the x-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 ($UX = 0$)
- 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 y-axis (UY) and rotation about the z-axis ($ROTZ$) remain unconstrained

